

CIVIC TURBO | **1000BHP GT-R**

545bhp of boosted B18 | R35 boasts big numbers



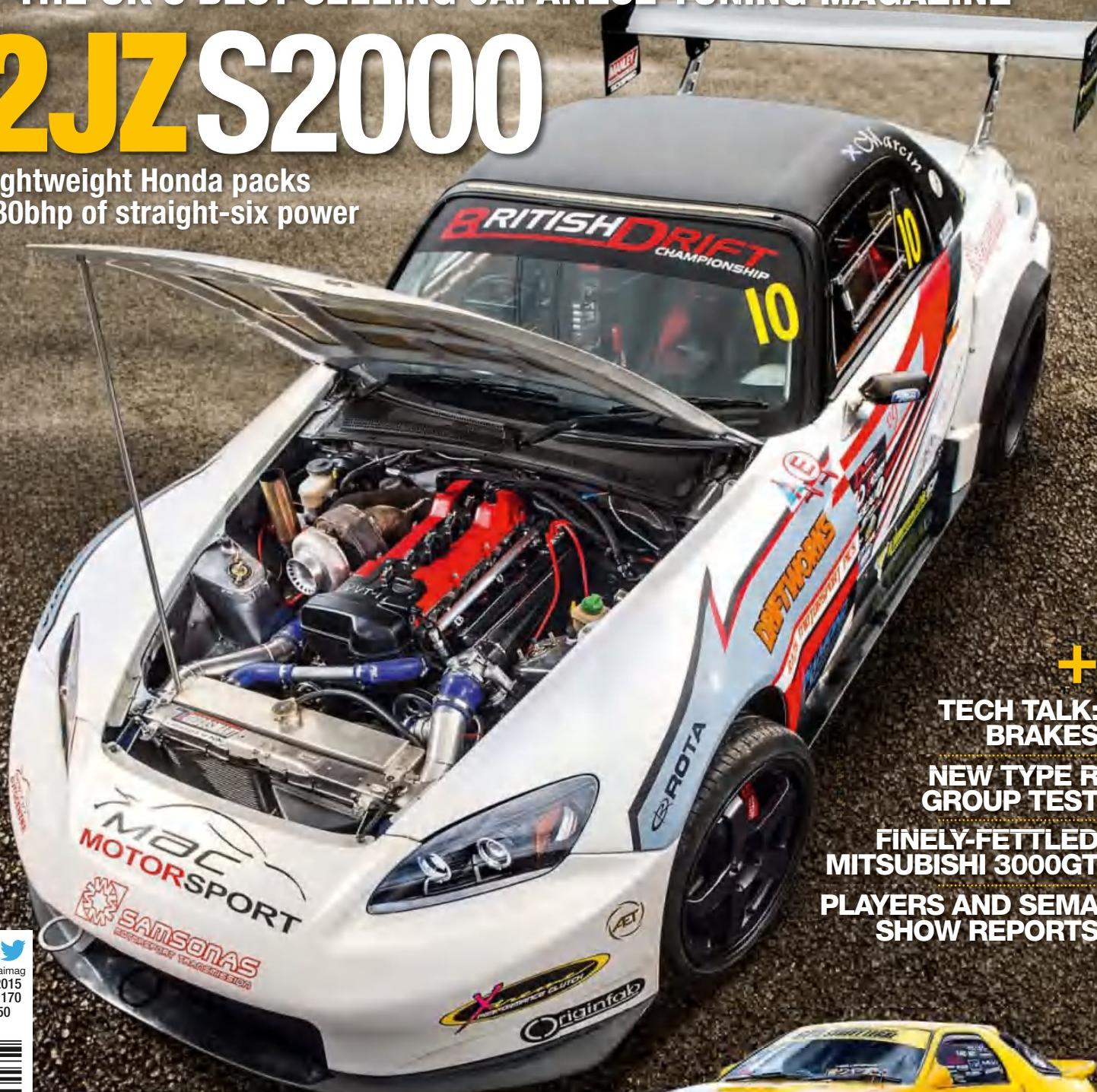
JAPANESE CARS

BANZAI

THE UK'S BEST-SELLING JAPANESE TUNING MAGAZINE

2JZ S2000

Lightweight Honda packs
730bhp of straight-six power



TECH TALK:
BRAKES

NEW TYPE R
GROUP TEST

FINELY-FETTLED
MITSUBISHI 3000GT

PLAYERS AND SEMA
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WILD CHILD

Low and loud 13B turbo-powered FC RX-7



ABP MOTORSPORT

We share the passion!
Call our Sales Team Today

01270 567 177

HONDA Civic Type R FN2

ABP have developed a full range of tuning parts for the FN2 Civic Type R using our own development car. Testing on the Nürburgring we offer exclusive suspension, brake and performance parts that guarantee to bring your Type R alive! Who said the EP3 was better....



EXHAUSTS

MILLTEK SPORT ABP exclusive cat-back stainless steel exhaust system.....	£499.00
These exclusive to ABP Milltek systems are quite simply a must have. Superb fit, beautiful quality, amazing soundtrack and good power gains.	
MILLTEK SPORT 3" round tailpipe trim.....	£125.00
PIPER Twin box cat-back stainless steel exhaust system.....	£630.00
PIPER Stainless Steel Race exhaust manifold & stainless de-cat pipe.....	£770.00
O2 simulator (removes ECU light with race manifold fitted).....	£70.50
PIPER Stainless Steel cat-back exhaust system.....	£520.00
HKS Sport Muffler cat-back exhaust system (3" tailpipes & HKS trims).....	£862.00

FITTING AVAILABLE ON ALL PRODUCTS / UK & WORLDWIDE DELIVERY SERVICE

AIR FILTERS

K&N Sports air filter replacement element (lifetime warranty).....	£41.00
K&N Apollo closed box air filter induction kit.....	£158.00
AEM Short Ram air induction kit (polished or red alloy intake pipe).....	£169.00
POWERTEC Stainless steel air filter kit (including heat shield).....	£149.00
PIPERCROSS Sports air filter kit (including heat shield).....	£145.00
HKS Racing Suction Kit (includes alloy intake pipe).....	£365.00

SUSPENSION

EIBACH ABP Exclusive -30mm lowering spring kit.....	£150.00
These are the very best springs you can buy for the FN2. Offering the ultimate in looks, handling, reduced roll and better ride quality there really are no downsides. Please call for fully fitted prices.	
EIBACH Pro-Kit -15mm lowering spring kit.....	£159.00
All the advantages of our -30mm kits but with less lowering!	
EIBACH Front adjustable camber bolts (essential on lowered cars).....	£25.00
EIBACH Rear camber & toe shims (to get the very best handling).....	(each) £8.50
KW Variant 1 coil-over suspension kit (fully adjustable ride height).....	£879.00
KW Variant 2 coil-over suspension kit (fully adjustable height & rebound).....	£169.00
KW Variant 3 coil-over suspension kit (fully adjustable height, bump & rebound).....	£1,379.00
TEIN S-Tech lowering spring kit (Front -15mm Rear -20mm).....	£228.00
TEIN Supersteel coil over kit with upper mounts (adjustable height & damping).....	£1,080.00
EIBACH 1.5mm Pro-Specer kit (improves looks, steering feel & high speed stability).....	£108.00
ABP Stage 1 Fast Road suspension geometry set-up (including camber bolts).....	£135.00

This set up in ABP's workshop improves the FN2 massively. Improving turn in, reducing under-steer and offering greatly improved feel & handling. A MUST HAVE MODIFICATION.

ABP Stage 2 Fast Road suspension geometry set-up (including bolts & rear shims).....

£224.00 As above but stage 2 also includes removing the rear hubs, fitting correct camber & toe shims (included in price) and setting both front and rear geometry to fast road spec.

BRAKES

STOPTECH Fast Road Front brake pads (set).....	£49.00
STOPTECH Front Sport Stop Grooved brake discs (pair).....	£190.00
STOPTECH Rear Sport Stop Grooved brake discs (pair).....	£145.00
POWERSLOT Front 350mm Big-disc conversion kit.....	£355.00
Kit uses original caliper and offers superior looks & braking with excellent 350mm discs.	
Kit comes complete with 350mm discs, caliper relocation brackets and fitting kit.	
STOPTECH Touring 300mm 4-POT Brake conversion kit*.....	£995.00
These new budget 300mm kits use a unique directional veined 300mm grooved disc with the ST41 4-pot caliper. Kit comes complete with discs, calipers, pads, hoses and fitting kit. This kit looks great and performs even better!	
STOPTECH BBK 328mm Brake caliper conversion kit*.....	£1,450.00
The legendary StopTech Big Brake Kit is simply awesome in every way. Using 2-piece 328mm discs and ST40 4-pot calipers the performance on offer from this kit is unreal. Essential for ultra fast road or serious track use. Kit comes complete with 2-piece 328mm discs, alloy bells, calipers, pads, hoses and fitting kit. Choice of Black or Red calipers	
"EIBACH 1.5mm Pro-Specer kit (required to fit StopTech brake kits behind OE Honda wheels).....	£108.00
FERODO DS2500 Front high performance brake pads.....	£99.50
FERODO DS2500 Rear high performance brake pads.....	£92.50
EBC Red Ceramic Front high performance brake pads.....	£87.00
EBC Red Ceramic Rear high performance brake pads.....	£54.00
EBC Turbo Groove drilled & grooved front brake discs (pair).....	£245.00
TAROX G88 40-Groove high performance front brake discs (pair).....	£217.00
GOODRIDGE Stainless steel 6-line brake hose kit (including distribution blocks).....	£175.00
MOTUL RBF600 High performance brake fluid (1/2 LT).....	£15.50
FOLIATEC Caliper paint kit (various colours).....	£24.90

FITTING AVAILABLE ON ALL PRODUCTS / UK & WORLDWIDE DELIVERY SERVICE

OTHER ITEMS

HKS Iridium spark plugs (set 4).....	£82.00
PIAA Headlight bulb upgrade kits (Set of 6 bulbs - sidelight, dip & main beam).....	from £95.00
YOKOHAMA 225/40X18 PARADA Spec 2 tyre.....	£125.00
YOKOHAMA 225/40X18 ADVAN NEOVA AD08 tyre (ultimate track day tyre).....	£169.00
YOKOHAMA 225/35X19 Advan Sport OE tyre.....	£215.00

SERVICING FOR FN2 & EP3 TYPE R

ABP offer a full range of servicing to HONDA specification which will not effect the manufacturer's warranty.	
12 month / 12,500 mile service to HONDA spec including all parts & Labour.....	£119.00
24 month / 25,000 mile service to HONDA spec including all parts & Labour.....	£198.40
36 month / 37,500 mile service to HONDA spec including all parts & Labour.....	£154.00
48 month / 50,000 mile service to HONDA spec including all parts & Labour.....	£198.40
60 month / 62,500 mile service to HONDA spec including all parts & Labour.....	£119.00
72 month / 75,000 mile service to HONDA spec including all parts & Labour.....	£385.00

All of our services include MOTUL fully synthetic oil, Honda oil & air filters & NGK spark plugs. Cars are serviced to exact HONDA specification and service books are stamped maintaining the warranty. If cars are fitted with performance air filters above prices will be reduced accordingly.



ABP MOTORSport - Your One Stop Tuning Shop

- Modern easy to find premises
- Established for over 45 years
- Fully equipped on-site workshop
- Easy access of the M6 (J16)
- Large parking facilities
- Passionate staff
- Fast mail order
- 1st class customer service
- Excellent product availability
- Competitive prices

Please phone if your car is not listed, as only a small range of our parts are listed

- Mail Order • Retail Tuning Shop
- Workshop Fitting Service • MOT
- Servicing • Repairs & Tuning

HONDA Civic Type R EP3

ABP purchased an EP3 Type R back in 2001 with the sole aim of developing a full range of tuning parts. We offer exclusive ranges of suspension, brake and performance parts that we believe are the very best available. 10 years on the EP3 is still a great car and more affordable than ever so with a few choice mods the tuning world is your oyster....



£349.00

EXHAUSTS

PIPER ABP exclusive Single-box cat-back stainless steel exhaust system.....	£349.00
These exclusive to ABP Piper single silencer systems are quite simply a must have. Superb fit, beautiful quality, amazing soundtrack and good power gains.	
PIPER Twin box cat-back stainless steel exhaust system Above as above but with 2 silencers – same power with less sound!.....	£399.00
PIPER Stainless Steel Race exhaust manifold & stainless de-cat pipe.....	£498.00
PIPER Stainless Steel Race exhaust manifold & 200CEL Sports Cat.....	£678.00

Independent rolling road tests show an incredible increase of +22BHP using a PIPER manifold, de-cat and exhaust system on the EP3 Type R!

DC SPORTS Stainless steel SCS cat-back exhaust system (4" round tip).....

£430.00

DC SPORTS Stainless steel SHORTY exhaust manifold (uses original cat).....

£375.00

DC SPORTS Stainless steel RACE exhaust manifold (removes catalyst).....

£395.00

All DC Sports items are beautifully crafted in polished stainless steel and offer fantastic looks and power gains.

The SCS system comes with a removable silencing baffle ideal for track days.

O2 simulator (removes ECU light with race manifold fitted).....

£70.50

O2 simulator (removes ECU light with race manifold fitted).....

£70.50

HKS Hi Power 409 cat-back exhaust system (120mm angled tailpipe).....

£471.00

Stunning JAP style exhaust system with removable silencing baffle and polished 120mm tailpipe

£204.00

SUPERSPORT Stainless Steel straight through B-pipe.....

£26.00

ENERGY SUSPENSION Up-rated engine mount insert bush kit.....

Essential when using any modified exhaust manifold. These also aid traction & prevent wheel hop.

FITTING AVAILABLE ON ALL PRODUCTS / UK & WORLDWIDE DELIVERY SERVICE

AIR FILTERS

K&N Sports air filter replacement element (lifetime warranty).....	£49.00
K&N 57i Air filter kit.....	£109.00
K&N Typhoon air filter induction kit (wrinkle red finish intake pipe).....	£150.00
AEM CAI Cold Air Induction kit (filter relocated behind front bumper) +15BHP.....	£245.00
AEM V2 Air Filter Induction kit (Unique dual plenum intake pipe) +18BHP.....	£265.00
PIPERCROSS 200NM Sports air filter kit (fully enclosed air box system).....	£175.00

Intake kits make a massive difference to the EP3 Type R offering anything up-to+18BHP power gains.

Choosing the right combination of exhaust system and filter kit can add up-to+25 BHP power improvements!

SUSPENSION

EIBACH ABP Exclusive -30mm lowering spring kit.....	£150.00
These are the very best springs you can buy for the EP3. Offering the ultimate in looks, handling, reduced roll and better ride quality there really are no downsides.	
EIBACH Pro-Kit -15mm lowering spring kit - All the advantages of our -30mm kits but with less lowering!.....	£159.00
EIBACH Front adjustable camber bolts (essential on lowered cars).....	£25.00
EIBACH Rear fully adjustable camber arms (to get the very best handling).....	(pair) £135.00
BILSTEIN B4 Shock absorber kit (front & rear shocks).....	£385.00
BILSTEIN B8 Sports up-rated shock absorber kit (front & rear shocks).....	(set 4) £655.00
BILSTEIN are arguably the Worlds best shock absorbers, developed on the Nürburgring they offer fantastic chassis control without the extremes of coil-over setups. Simply the best real World suspension solution.	
TEIN S-Tech lowering spring kit -20mm.....	£228.00
TEIN BASIC coil over suspension kit (adjustable height only).....	£708.00
TEIN Supersteel coil over kit (adjustable height & damping).....	£804.00
TEIN Supersteel coil over kit with upper mounts (adjustable height & damping).....	£1,080.00
EIBACH 1.5mm Pro-Specer kit (improves looks, steering feel & high speed stability).....	£108.00
JDM Rear Anti Roll Bar (including bushes).....	£102.50
E-TECH front polished alloy strut brace.....	£87.50
E-TECH front wide-bore lightweight alloy strut brace.....	£170.00
ABP Fast Road suspension geometry set-up (including front camber bolts).....	£155.00

This set up in ABP's workshop improves the EP3 massively. Improving turn in, reducing under-steer and offering greatly improved feel & handling. A MUST HAVE MODIFICATION.

FITTING AVAILABLE ON ALL PRODUCTS / UK & WORLDWIDE DELIVERY SERVICE

BRAKES

STOPTECH Fast Road Front brake pads (set).....	£49.00
STOPTECH Fast Road Rear brake pads (set).....	£38.00
STOPTECH Front Sport Stop Grooved brake discs (pair).....	£190.00
STOPTECH Rear Sport Stop Grooved brake discs (pair).....	£140.00
POWERSLOT Front 350mm Big-disc conversion kit.....	£355.00
Kit uses original caliper and offers superior looks & braking with excellent 350mm discs. Kit comes complete with 350mm discs, caliper relocation brackets and fitting kit.	

STOPTECH Touring 300mm 4-POT Brake conversion kit*.....

£995.00

These new budget 300mm kits use a unique directional veined 300mm grooved disc with the ST41 4-pot caliper. Kit comes complete with discs, calipers, pads, hoses and fitting kit. This kit looks great and performs even better!

EIBACH 1.5mm Pro-Specer kit* (required to fit Touring kit behind OE Honda wheels).....

£1,450.00

The legendary StopTech Big Brake Kit is simply awesome in every way. Using 2-piece 328mm discs and ST40 4-pot calipers the performance on offer from this kit is unreal. Essential for ultra fast road or serious track use. Kit comes complete with 2-piece 328mm discs, alloy bells, calipers, pads, hoses and fitting kit. This kit fits behind the original Honda 17" alloy. Choice of Red or Black calipers.

FERODO DS2500 Front high performance brake pads.....

£99.50

FERODO DS2500 Rear high performance brake pads.....

£91.50

EBC Red Ceramic Front high performance brake pads.....

£87.00

EBC Red Ceramic Rear high performance brake pads.....

£58.00

EBC Turbo Groove drilled & grooved front brake discs (pair).....

£245.00

TAROX G88 40-Groove high performance front brake discs (pair).....

£217.00

GOODRIDGE Stainless steel 4-line brake hose kit (zinc plated unions).....

£62.00

MOTUL RBF600 High performance brake fluid (1/2 LT).....

£15.50

FOLIATEC Caliper paint kit (various colours).....

£24.90

OTHER ITEMS

HKS Iridium spark plugs (set 4).....

£82.00

NEUSPEED Short Shift gear lever kit

£95.00

PIAA OE 3-piece Clutch kit - Fitting service available

£195.00

PIAA Headlight bulb upgrade kits (Set of 6 bulbs - sidelight, dip/main beam)

from £65.00

PIAA Silicon front wiper blade kit (pair of silicone wiper blades)

£43.00

YOKOHAMA 215/40X17 PARADA Spec 2 tyre

£92.00

YOKOHAMA 215/40X17 ADVAN NEOVA AD08 tyre (ultimate track day tyre)

£156.00

ABP recommend changing the 205/45x17 tyres to the better

01270 567 177

NEXT DAY DELIVERY

PHONE TODAY FOR NEXT DAY DELIVERY* or WHY NOT CALL INTO OUR SHOWROOM TO COLLECT OR LET US FIT THE PARTS FOR YOU IN OUR FULLY EQUIPPED ON-SITE WORKSHOP

* Orders must be placed before noon and are only available on stock items (excluding Sunday). Please phone for postage prices on your order.

~ EXPORT ORDER ARE WELCOME ~

Orders can be placed by phone with a credit/debit card for immediate despatch. Postal orders and cash are also acceptable.

At ABP full security checks are made to ensure the validity of the credit card holder. All attempted credit card frauds are reported to the police.

www.abpmotorsport.co.uk

~ ALL PRICES INCLUDE VAT ~

We reserve the right to change prices in accordance with certain manufacturers. Rights of cancellation details supplied. Prices are correct at time of press. E&OE.

STOPTECH
HIGH PERFORMANCE BRAKE SYSTEMS

ABP are an official UK importer of STOPTECH brakes and offer the full range of high performance brake pads, brake discs and the AWESOME caliper conversion kits. Used extensively in Time Attack series cars these kits are reputed to be the best available. Full range of 4 & 6 pot kits available for most Japanese cars please call for prices to make your car STOP!

STOPTECH high performance brake pads	from £38
EVO 5-9 & Impreza STI FRONT & REAR brake pad set	£118
STOPTECH High performance grooved brake discs	from £140
Mitsubishi EVO 5-9 Front grooved brake discs	£225
Mitsubishi EVO 5-9 Rear grooved brake discs	£195
Honda Civic Type R FRONT & REAR grooved brake disc kit	£330
STOPTECH Big Brake Caliper conversion kits	from £995
Honda Civic Type R EP3 & FN2 Touring kit (300mm)	£995
Honda Civic Type R EP3 & FN2 (4-pot 328mm)	£1,450
Mitsubishi EVO 7-10 (4-pot & 6-pot kits)	from £1,550
Nissan Skyline R32, 33, 34 (4-pot & 6-pot kits)	from £1,550

Full range available for Honda, Lexus, Mazda, Nissan, Subaru & Toyota

AEM
ENGINEERED TO OUTPERFORM

AEM offer the very best intake kits for your Japanese car. AEM lead the way in air filter technology and now use the revolutionary DRYFLOW filter units. ABP are an official AEM importer dealing directly with the manufacturer!

- Massive Range stocked
- Excellent power gains
- Call for prices

Cold Air Intake Kits	
Honda Integra Type R DC2	£269.00
Honda Integra Type R DC5	£255.00
Subaru Impreza STi (2001 on)	£262.00
Subaru Impreza Inc STi (2008 on) +30BHP	£255.00
Mazda MX5 (2006 on)	£275.00
Mitsubishi EVO 10 +16BHP	£275.00
Short Ram Intake Kits	
Mitsubishi EVO 7, 8, 9 (inc. heat shield)	£235.00
Nissan 350Z (inc. heat shield)	£315.00
Subaru Impreza inc. STi (2001 on)	£169.00
V2 Dual Plenum Air Intake Kits	
Honda S2000	£275.00
Honda Civic Type R EP3 & DC5 Integra	£265.00

DC
SPORTS

ABP are official importers UK importers of DC Sports products direct from the USA. Products include ceramic coated & stainless steel exhaust manifolds and stainless steel exhaust systems. DC Sports Exhaust Manifolds

Honda Civic Type R EP3 Stainless Steel Race manifold - (These fully polished manifolds also remove the catalyst)	£395.00
Nissan 350Z Ceramic Coated tubular sports manifolds (pair)	£475.00
Mitsubishi EVO 5-9 Long Bore Stainless Steel Race Manifold	£399.00
DC Sports SCS Stainless Steel Exhaust Systems	
Honda Integra Type R DC2	£399.00
Honda Integra Type R DC5	£430.00
Honda Civic Type R EP3 (inc. removable baffle)	£430.00
Mitsubishi EVO 7, 8 & 9	£449.00
Nissan 350Z (Sounds like a 911 Race car!)	£699.00
Subaru Impreza (2002 on) inc. STi & WRX	£425.00

FITTING AVAILABLE ON ALL PRODUCTS / UK & WORLDWIDE DELIVERY SERVICE

EIBACH

EIBACH produce the Worlds finest springs with quality second to none. Not only do they improve the looks of the car but they also offer better handling with improved ride quality. ABP offer the full range of EIBACH suspension products available including lowering spring kits, suspension kits, alignment products and wheel spacer kits. PLEASE CALL

HKS

ABP can supply and fit the full range of HKS tuning products from Japan. HKS offer some of the finest quality tuning parts available in the World. Products available include sports air filter kits, sequential dump valve kits, iridium spark plugs, exhaust systems, intercoolers, boost controllers, suspension, cams, electronics and more. PLEASE CALL

PIAA

ABP stock the full range of PIAA products including bulbs, silicon wiper blades, lamps and vision products. PIAA produce a massive range of lighting products to suit all applications and they are used extensively in motorsport throughout the World. Don't confuse PIAA bulbs with the cheaper brands out there as PIAA are THE BEST.

- LED Sidelight bulbs from £24.50
- Headlight bulbs from £35.00
- Silicon wipers from £21.50

TEIN
High Performance Suspension

We offer the full range of TEIN suspension to suit all needs & budgets. TEIN offer kits to suit road, track day, drift or competition use. Choose from a lowering spring kit to a fully adjustable coil over kit with adjustable alloy top mounts. Kits available for Honda, Lexus, Mazda, Mitsubishi, Nissan, Subaru & Toyota.

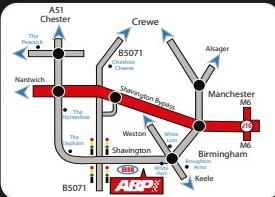
- Lowering Springs from £155
- Coil-Over Kits from £660

TAROX

Tarox G88 40-Groove brake discs offer awesome braking performance under the most extreme conditions. Unique heat treatment process makes these one of the strongest discs available. Full range of uprated brake discs, brake pads and big caliper conversion kits available for most Japanese cars. PLEASE CALL

Front Road brake pads from £49.00
G88 40 Groove brake discs from £159.00
TAROX big brake caliper kits from £1,250

How to find us



ABP Motorsport
416 Newcastle Road, Shavington,
Crewe, Cheshire CW2 5EB
Fax 01270 568177
sales@abpmotorsport.co.uk

Opening Hours
Mon-Fri 8.30am - 6.00pm
Sat 9.00am - 3.00pm

WORKSHOP FITTING SERVICE

Our fully equipped modern workshop allows us to carry out a full range of servicing, maintenance & performance modifications in-house. Staffed by fully qualified enthusiastic technicians trained to the highest standards we are able to skilfully fit, set-up, tune and optimise any modifications to get the best out of your car – This is our passion! From regular manufacturer spec servicing, MOT testing, performance tuning & chassis development to full on track day preparation we can offer the complete service.



ABP's workshop carries Cheshire County Council Trading Standards approval assuring you of the highest quality and 1st class customer service. ABP achieved Trading Standards first perfect 100% mystery shop result in August 2010.

ABP were awarded CAT magazines coveted title of National Garage of the Year in both 2010 and 2011. An award we all take very seriously and testament to our very high standards.

- Performance Parts Installation
- Manufacturer Spec Servicing
- Suspension Fitting Specialists
- Wheel alignment & Suspension Geometry
- Maintenance & Repairs
- MOT Testing Station
- Customer Supplied Parts Fitted
- Clutch fitting
- Cam / Timing Belts Replaced
- Fully Skilled & Experienced Staff
- Trading Standards Approved
- National CAT Garage of the Year 2010 & 2011



SERVICING AND MAINTENANCE

We offer a full servicing & maintenance service to our customers. ABP Service all cars to manufacturer specification therefore maintaining warranties & correct service history!

The advantages our service gives you over & above the dealers (or dealers!) are:

- Enthusiastic passionate staff
- Guaranteed level of personal service
- Full range of services including modifications
- Competitive Labour prices

- All makes / models worked on
- No problems with imports
- One-Stop tuning shop

FULL range of servicing / maintenance available including timing belts, clutches, brakes, suspension & steering work. Please phone with your exact requirements and we will be happy to advise and give competitive prices.

WHEEL ALIGNMENT & SUSPENSION GEOMETRY

- Vague Steering?
- Steering wheel miss-aligned?
- Excessive or uneven tyre wear?
- General poor handling?



Lots of Japanese cars have fully adjustable wheel alignment, castor adjustment & camber adjustment both front and rear. Manufacturer's geometry specifications allow for very generous tolerances which can lead to poor handling, excessive tyre wear, vague steering feel and even reduced MPG!

ABP can 'blueprint' your suspension geometry settings allowing you to benefit from maximum steering response & improved grip along with improved tyre life and increased economy. We have the latest computerised 4-wheel alignment equipment and are able to optimise the geometry settings on your car.

ABP can also offer unique FAST ROAD settings for many cars offering improved handling and turn in by introducing more extreme alignment practices. We can also set your geometry up to your own individual spec for track use or drifting etc.

Please phone for exact prices on your car & prepare to feel the differences immediately.

Examples

Full suspension 4-wheel alignment check and report (no adjustment)	£55.00
Front Wheel Alignment check & adjust	from £35.00
Front & Rear Wheel Alignment check & reset	from £75.00
Subaru Impreza Turbo / STi / WRX & Mitsubishi EVO 5-10	£135.00

Check and reset front & rear Wheel Alignment & Camber angles to Fast Road spec

HONDA S2000 Check and reset front & rear Wheel Alignment; Camber and Castor angles to Fast Road or Honda spec...£140.00

Honda Civic Type R EP3 ABP Fast Road suspension geometry set-up (including front camber bolts)£155.00

This set up includes supplying & fitting adjustable front camber bolts, reset the front & rear Wheel Alignment & Camber angles to ABP Fast Road spec. These improve the EP3 massively. Improving turn in, reducing under-steer and offering greatly improved feel & handling and reduced tyre wear!

Honda Civic Type R FN2 ABP Stage 1 Fast Road suspension geometry set-up (Including camber bolts)£135.00

This set up includes supplying & fitting adjustable front camber bolts, reset the front Wheel Alignment & Camber angles to ABP Fast Road spec. These improve the FN2 massively. Improving turn in, reducing under-steer and offering greatly improved feel & handling.

Honda Civic Type R FN2 ABP Stage 2 Fast Road suspension geometry set-up (Including bolts & rear shim kit)£224.00

As above but stage 2 also includes removing the rear hubs, fitting correct camber & toe shims (included in price) and setting both front and rear geometry to fast road spec.

SUSPENSION AND LOWERING

ABP can provide various levels of suspension tuning for all Japanese vehicles. We offer a full fitting service on over 7 manufacturers lowering spring options, numerous sports shock absorbers and many complete adjustable suspension kits including fully adjustable coil-over kits.

Spring kits available from EIBACH, TEIN, SPAX, H&R, GMAX, KW and Pi

Shock Absorbers available from KONI, BILSTEIN, KW, SPAX and EIBACH

Suspension kits available from EIBACH, KONI, BILSTEIN, TEIN, KW, H&R, SPAX & GMAX

Lowering spring kits supplied & fittedfrom £295.00

Sports suspension kits supplied & fittedfrom £445.00

Fully adjustable coil-over suspension kits supplied & fittedfrom £820.00

Phone ABP for a price on either lowering or making your car 'Really Handle!'

FITTING PRICES

ABP can fit all of the parts that we sell and we are also happy to fit customer provided parts in our workshop.

Here are some general fitting prices for our workshop:

Sports exhaust systems fitting	from £55.00
Performance air filter induction kits fitting	from £55.00
Brake discs & pads fitting	from £82.50
Big Brake conversion kits fitting	from £110.00
Suspension kit fitting	from £165.00

Please phone ABP's workshop on 01270 567177 for accurate prices on fitting parts to your car or to arrange a workshop booking time.

ALL CARS CATERED FOR – PLEASE CALL

All labour prices do not allow for seized, broken or damaged components on your car.

PLEASE CALL TODAY FOR PRICES/INFORMATION ON ALL THE ABOVE PRODUCTS



XENON

ORDER TODAY - RECEIVE TOMORROW



CONTACTS:

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sales@xenonuk.co.uk

WWW.XENONTUNING.CO.UK

AEM's legendary Digital Wideband O₂ AFR UEGO Gauge is a wideband UEGO air/fuel ratio controller (AFR) and gauge in one. It unites accuracy, speed and control with an easy to read, digital LED display and sweeping LED "needle" that changes colors as AFR changes from rich to lean. Part # 30-4110



The Wideband FAILSAFE Gauge is a Universal Exhaust Gas Oxygen (UEGO—"you-way-go") controller with an internal boost sensor, an internal data logger and a full color Organic Light Emitting Diode (OLED) display.

WIDEBAND AIR/FUEL & BOOST IN ONE GAUGE!

can save
your ENGINE if it runs LEAN

£156.00



other products



AQ-1 Data Logging System
£244.50



High Flow In-Tank Universal Fuel Pump
£83.00



Analog Gauge AFR Wideband UEGO Controller
£170.00



Universal Adjustable Fuel Pressure Regulator
£97.50



4-Channel Wideband Air/Fuel UEGO Control
£670.00



Customer Support 24 HOURS 7 DAYS A WEEK



FREE 24 HOUR OVERNIGHT DELIVERY BY



express



Ships on the same day. Valid for orders paid till 17:00 UK time.



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If you're anything like me, the original *Gran Turismo* for the PS1 has a lot to answer for. It was through that game, and others like it, that I developed a passion for Japanese cars, and, arguably, tuning them. With that in mind, we're starting a new regular feature this month called *Gran Turismo* (see what we did there?) where we take a fond look back at the makes and models that kick-started our love of cars. It certainly made for a good trip down memory lane for us; turn to p22 and let us know if it does the same for you...

Elsewhere, it's getting harder and harder to ignore the amount of 2JZ engine conversions cropping up on a regular basis lately. They seem to be appearing everywhere now and enthusiasts are shoehorning them into just about every possible platform. We're certainly not complaining. The 2JZ offers unrivalled levels of power and reliability, so it's no surprise they seem to lead the way when it comes to project car owners looking for the most bang-for-their-buck. This month's cover car certainly makes good use of that and the 730bhp S2000 makes for the perfect drifting weapon. Read all about it, and how hard it was to fit, on p74.

Finally, if you flick to *Our Cars* on p108, you will have noticed we have another new addition to the fleet. Honda UK has kindly loaned us a brand-new Civic Type R for long-term testing. Over the next six months we've got a whole lot planned for the hottest of hot hatches, so watch this space.

Enjoy the issue!
Simon Holmes, Editor



Cramming a 2JZ engine into a little Honda is no mean feat, but the job's been done breathtakingly well here...



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IF YOUR
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FEATURES

028 THE RIGHT TYPE

The new Civic Type R is set to raise the bar when it comes to hot hatches as we know them, but just how good is it against the current competition? We find out at Bruntingthorpe Proving Ground...

038 SHEER SHOW STOPPERS

The SEMA show seems to get bigger and better every year, and 2015 was no exception, with plenty to take in no matter where you looked...

044 BOLD APPROACH

When Marc Hadfield bought this Civic Ferio 14 years ago, he was just planning a simple fast road project. It's safe to say he got a little bit carried away...

056 TRIED AND TESTED

What happens when a Supra specialist turns its hand to building R35 GT-Rs? It produces a Nissan with a spec list very different to most others in the UK, but one that's equally as impressive in its own right...

074 EASY DOES IT

With a dyno-proven 730bhp under its belt so far, this 2JZ-powered S2000 is not what you would call conventional, and nor is the man who built it...

082 GOING OUT IN STYLE

Japshow Finale began the winding-down of 2015's show calendar back in October. And as far as end-of-season shows go, it set the bar pretty high...

126 IMMACULATE CONCEPTION

Mark Kelly's 3000GT is a masterclass in tuning obscure 1990s super coupés; built for street, strip and show, it's a true polymath. And unlike his last one, it's not on fire...

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016 TUNER DRIVE: CHARGE OF THE LIGHT BRIGADE

We take a closer look at the special edition BBR converted Mazda MX-5 fitted with a GT270 turbocharger conversion to give rather potent performance to say the least...

NEW

096 TECH TALK: BRAKES

This month *Tech Talk* takes a closer at performance disc brakes, the way they work, and how and why different upgrades can improve your car's braking abilities...

NEW

106 QUICK BUYER: MITSUBISHI EVO VIII

If you're thinking of buying a super-saloon for the road then the Evo VIII FQ-300 may well be perfect; here are the key things you should know about it...



088

STYLE IS EVERYTHING

Stuart Lawson's outrageous RX-7 is out to remind us that drifting isn't just about a bunch of points – it's also about looking as cool as possible in the process...

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NEW

OUR CARS

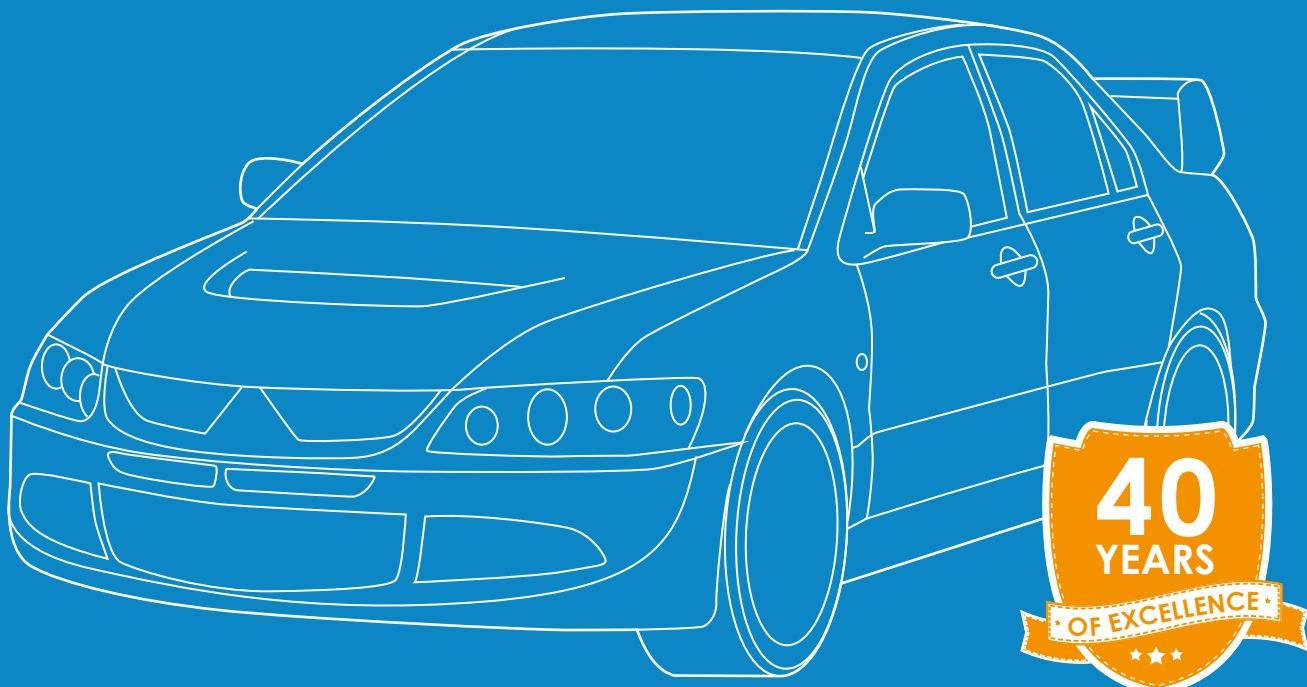
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QASHQAI R HITS 222MPH

Remember SevernValley Motorsport's insane Nissan 'Qashqai R' from the cover of the December '14 issue of *Banzai*? Well, the tuning wizards have had the chance to test their monster SUV recently with some seriously impressive results.

At the Bruntingthorpe Proving Ground the car hit a top speed of 222mph for the Vmax Hypermax III event. The guys also headed to Santa Pod to record a quarter-

mile time of just 9.1secs at 162mph!

The car features full GT-R running gear, which has been tuned up to well over 1000bhp, to allow driver John Graham to hit such colossal performance figures. We hear that there's plenty more to come from this bonkers project car, too, so we'll keep our eyes peeled for even more impressive results...

CONTACT: www.severnvalleymotorsport.co.uk



COULD THIS BE THE MAZDA RX-9?

Exciting news from Mazda this month as the firm has unveiled this gorgeous concept car, the 'RX-Vision', at the Tokyo Motor Show back in late October.

What's really exciting, though, is the fact that the car is said to be powered by a next-generation rotary engine – the first car to be powered in this way since production of the RX-8 ceased in 2011.

Using the 'Skyactiv-R' label, the new engine is a result of ongoing research and development into this unconventional technology behind-the-scenes at Mazda's

HQ. Whether or not we see another rotary-powered production car remains to be seen. But the signs are looking very, very good. As you can probably tell from the pictures, this concept is a bit of a looker, and its front engine, rear-wheel drive layout would be sure to go down well with the performance enthusiasts amongst you.

We can't wait to see if it makes production, and will keep you posted with the latest news...

CONTACT: www.mazda.co.uk



ODYSSEY RACE BATTERIES

Thinking of relocating your battery to the boot? Or maybe you want to put your project on a weight loss programme? Perhaps you're just looking for something with a bit more electrical grunt for the winter? If so, you can't go wrong with one of Odyssey's lightweight, sealed race units.

The company claims these batteries weight in at much less than OEM parts, whilst offering a much longer life and the ability to retain charge a lot more effectively. What's more, because they're fully sealed, they can even withstand being fixed on their sides if space is tight.

PRICE: From £152.50

CONTACT: www.burtonpower.com



BLACK MAGIC

It may seem trivial but there's more to the colour of your performance radiator than just how cool it looks.

Although heavily debated, there has been some scientific evidence to suggest that black radiators are better at dispersing heat than their silver counterparts. This is why Japspeed has made its latest Impreza GC8 radiator a 'Black Edition' in – you guessed it – a stealthy black finish.

The beefy 50mm unit promises to offer a 30% increase in cooling capabilities over the standard unit, so it sounds like a must for spirited driving!

PRICE: £179

CONTACT: www.japspeed.co.uk



EXHAUSTIVE RESEARCH FOR THE PERFECT NOISE

Our friends over at Tarmac Sportz have just announced that they're now stocking an exciting new range of performance exhaust systems from renowned pipe expert ARK Performance.

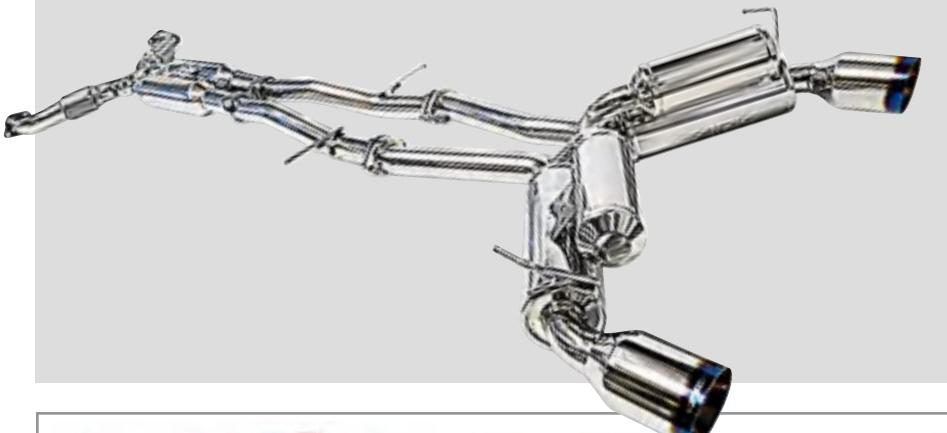
The 'GRIP' series of exhausts are not only painstakingly tested for optimum performance but a lot of time has also been spent making sure your car will sound absolutely amazing with one of

these stainless steel beauties installed.

On the Nissan 370Z system, for example, special resonator chambers ahead of the rear silencers fine-tune the frequencies emitted from the engine without negatively affecting gas flow. The exhausts are available in numerous styles and applications.

PRICE: From £1050

CONTACT: www.tarmacsportz.co.uk



WOODEN RACERS

Dutch-based Iconik Toys has just released this fantastic wooden race car transporter model, complete with two race cars. Inspired by Formula One cars of the 1960s, the retro styling on this super classy toy means that there's a danger you'll enjoy it more than your kids!

Iconik Toys also has a lovely wooden model of the now-derelict Reims race circuit to complement its cars.

PRICE: £20.60

CONTACT: www.iconiktoys.nl/en



LikeHell
DESIGN

LIKEHELL DESIGN TEE

Likehell is a fairly new design company started by creative genius and hardcore car nut Josh Mussell. You may have seen some of the brand's beautiful, distinct designs on social media, depicting some super-fresh cars in Likehell's signature style.

When it comes to Likehell's clothing range, though, we think you can't go wrong with this 'To Create and Inspire' tee – which sums up the company's ethos in super-trendy style.

You're sure to hear a lot from Likehell in the coming months, so hit up its site now for the full range of clothes and accessories!

PRICE: £20

CONTACT: www.likehelldesign.com

ZILLALIFE

KILLER ZILLA THREADS

If you haven't spotted Zillalife's signature funky leopard print pattern on the bodywork of a drift car this year, you might need to go and get your eyes tested.

You know the lifestyle brand is cool when it tells you that it specialises in drifting, skating and BMXing, which means that its clothing and accessories have become some of the more desirable items out there in recent times. It even produces its own range of drop-dead gorgeous bucket seats!

Sticking to the clothing, though, and our pick of the tees has to be this simple leopard print design, fresh in for the winter and sure to spice up your wardrobe. You can also get this crazy print on things like caps, lanyards, and even leggings!

PRICE: £17.99

CONTACT: www.zillalife.com



STATUS ERROR SKULL KEYRING

This rubber keyring features one of our favourite designs from one of the coolest car/BMX/JDM accessory brands around. What more do we need to say?

If you haven't checked out Status Error's full range on its website yet, we suggest you add it to your 'to-do' list!

PRICE: £2.99

CONTACT: www.statuserror.co.uk



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TAMIYA GT-R DRIFTER

The latest RC car to be released from Tamiya is almost certainly going to get the inner car nut in you excited. It may look like a standard Nissan GT-R but this beauty comes with the TT-02 D drift-spec chassis setup, featuring extra hard tyres and suspension, along with a whole host

of tuning parts available for ultimate remote control drifting pleasure.

Why not get your RC project car up and running over the winter while your real car hides away for a few months?

PRICE: £140 (kit) or £225 (RC bundle)

CONTACT: www.hobbyco.net

FOURTYFOUR NATURAL AIR FRESHENERS

Fed up with your car air freshener giving out nothing but the scent of cardboard after just a few days of hanging in your car? FourtyFour has brought a new innovation into the car fragrance scene with its new range of natural air fresheners.

The range uses real Madagascan vanilla pods, arabica coffee beans or Indian coconut to give a much more natural and longer-lasting smell in your ride. Said to be inspired by Japanese yachting trends, these air fresheners are some of the coolest we've seen and would make great stocking fillers!

PRICE: £10

CONTACT: www.fourtyfourwheelcompany.com

LOOK UP

It's hard to go to a major car event nowadays without seeing at least one cool dude piloting one of these futuristic drones around, getting the very best view of the show from above. But getting your own drone needn't cost the earth. Revell has just released this X-Spy 2.0 Quadcopter, which comes complete with a high-quality camera which can be streamed live to your smartphone to give you a real-time view of the scene from above.

This is sure to be one of the best-sellers this Christmas, so don't be left out!

PRICE: TBC

CONTACT: www.revell.de/en

(available from Argos, Toys 'R' Us, Amazon and all good model retailers)



NEW WHEELS

WHISTLER WHEELS KR7

SIZES: 15-16", various widths and PCDs

NOTES: 6TWO1 is soon to be stocking this fresh new design from Whistler Wheels which is sure to be a scene favourite for 2016!

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CONTACT: www.6two1.com



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SIZES: Custom

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CONTACT: www.facebook.com/pokalwheels



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CONTACT: www.momo-uk.co.uk



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Anything that makes life a shed-load easier is okay by us and, when it comes to car cleaning, there's a lot to be said for getting yourself a decent pressure washer. The truth is I don't know any pro-detailer or even amateur detailing buff that doesn't use one and, let's face it, that's probably because the initial washing phase can be back-breaking and isn't all that interesting in the first place.

The other thing about pressure washers is, once you've got one, you will use it *all* the time. The only people who don't seem to see the advantage are those who have never had their mitts on one, it's that simple.

So, with more cleaning power and less than half the water consumption, what's the downside? Usually the cost. Many of the top-end units can cost serious money, which is fine if you happen to make a few quid as a valet but not so fine for the home market. Perhaps that's why Silverline has brought in this ultra-compact version for under 50 quid. Let's have a look...

In the box...

First and foremost, what's great to see is that Silverline has included all the essentials. This includes a detergent dispenser and an extension piece so you get a full size lance (not a silly little one). This is pretty important because plenty of manufacturers out there will sell you the bare unit at what you think is a decent price, then sting your wallet on the extra bits and pieces.

There's no such problems here, the Silverline compact pressure washer comes with everything you could possibly need – even the power cord and high pressure hose are a good, healthy length which is always a massive bonus.

The other thing that's immediately noticeable is the overall size. Although there's a solid feel to it, there's no denying it's absolutely tiny. It's almost as if it's a toy which can only be a good thing if garage storage space is tight. Even so, 1650W and up to 105bar (or just over 1500PSI) is a hell of a lot of power to boast for such a small item. But will that be enough?

Verdict

Can this pint-sized item keep up with the performance of the bigger washers out there? For car detailing purposes it certainly

can and, if I'm totally honest, that was something I wasn't expecting.

The miniature size certainly doesn't mean miniature power and, although it's not going to cut it with the industrial stuff used for cleaning graffiti off bus stops or blasting weeds out of cracks in brick walls, the adjustable high/low pressure nozzle is still useful for cleaning all the mess off your drive after a greasy spanner-spinning session.

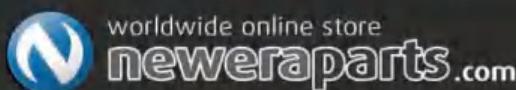
For your car cleaning regime you'll find plenty of grunt for blasting away mud, brake grime and the unbelievable amount of bird poo we seem to get in sunny Dartford. Adjusting the nozzle provides plenty of pressure to thoroughly clean without damaging paint or ripping off your wheel weights and, let's face it, that's all most of us really want.

Of course, the size also comes with the added bonus of it being infinitely portable, which is a damn sight handier than a full-size washer both for general manoeuvrability and when your mates want to borrow it, which they will, a lot. For the money, I just can't fault it! *

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CHARGE OF THE LIGHT BRIGADE – BBR MAZDA MX-5 GT270

We take a closer look at the special edition BBR converted Mazda MX-5 fitted with a GT270 turbocharger conversion to give rather potent performance to say the least...

Words and photos: Paul Cowland

In recent years, the Brodie Brittain Racing (BBR) tuning conversions for MX-5s have been acclaimed in every UK car magazine of note, while the secure 'e-tuning' facility of preferred ECU partner EcuTek has enabled BBR to market, supply and remotely tune its conversions in as many countries as the MX-5 itself is available.

But the affiliation between BBR and the MX-5 goes back much further. Twenty-five years ago, the already respected tuner developed and produced an official power upgrade for Mazda UK that went on to become the world's best-selling turbo conversion for the roadster. Continual refinement maintained the popularity of BBR's aftermarket turbo conversions for first- and second-generation MX-5 models well into the new millennium.

Ignoring for a moment the tantalising prospect of a BBR-tuned fourth-generation MX-5 (development is already underway), the latest creation from the Brackley outfit is this back-to-the-future turbo conversion for all 2005–2014 third-generation models. Driven by customer demand for an alliterative cocktail of properly potent performance, the limited edition 268bhp GT270 package distils a quarter century of forced induction expertise to transform the MX-5 into a giant-killer. Indeed, so confident was Mazda and BBR of its engineering and EcuTek software that, just like the original BBR-developed MX-5 Turbo of 1990/91, this boosted car could be purchased as a complete and fully warranted new car package from selected UK main dealers.

This particular example is the very first in a strictly limited build of just 100 cars. Based on a last-of-the-line Mk3.75 MX-5 2.0-litre Sport Tech Roadster Coupé, it belongs to the creator of the GT270 package – BBR's main man, Neil McKay. With an extensive catalogue

of goodies to choose from, Neil has applied his best ECU recalibration, conversion plumbing, chassis setup and engine-breathing know-how to perfect this car, which in our minds makes it the best of the best. So, here are the headlines: 0–60mph in 4.9 seconds, 150mph electronically limited top speed, 268bhp, 227lb ft of torque and specially developed switchable ECU functions.

Although this BBR MX-5 GT270 clearly has a lot to shout about, discretion is the order of the day in terms of the car's external appearance. A walk-around tour reveals tasteful 'BBR turbo' badges above the side repeaters and on the boot lid, further BBR branding engraved into the exhaust tailpipes, and a lower-slung ride height. The latter feature comes from the fitment of BBR's optional performance suspension upgrade, which comprises Koni adjustable dampers and specially developed progressively wound BBR lowering springs. Nothing else stands out, so to all intents and purposes the car could be standard.

Lifting the bonnet reveals a very different story, of course, with bespoke carbon fibre components, new intake pipework and a bespoke high-mounted Garrett turbocharger staring back at you in a Tetris-like marvel of packaging efficiency. A closer look at what's going on under there also reveals evidence of impressive attention to detail. For example, careful design and the adoption of that unique turbocharger layout means that no bodywork has to be cut or drilled during the installation of the conversion; it isn't even necessary to remove the front bumper to fit the front-mounted intercooler and associated pipework. Meanwhile, the battery, coolant expansion bottle and other ancillaries remain in their original locations, and the standard air box is also retained.





DIFFERENT MAPS

The OEM ECU has been programmed with four separate driving modes via EcuTek's ProECU software. Each of which can be discretely accessed via a special activation sequence using the cruise control toggle on the steering wheel.

The first mode gives access to the full power output and is designed for everyday fast road driving. Mode two offers the same no-holds-barred power but uses performance enhancers such as full throttle shifting to optimise the car for circuit driving. Mode three shifts the ECU programming into economy mode so the car can cruise along with greater efficiency in lower-grade 95 octane fuel, while mode four engages a security programme that limits engine speed to 3500rpm to prevent abuse by less competent drivers.



The GT25 ball-bearing turbo chosen for this application is quick to react thanks to finely engineered internals and BBR's efficient manifold and intercooler designs. The boost map is programmed to deliver grunt progressively to a maximum pressure of 7psi, as if the engine was still naturally aspirated.

Peak power doesn't arrive until 7350rpm, which is well into the redline – and maximum torque is found at a press-on engine speed of 5100rpm. Fear not if that all sounds a little too hectic and peaky, for 200lb ft of torque is at the driver's disposal from 3000 to 7000rpm to improve the car's everyday flexibility and give it an on-demand surge of acceleration irrespective of the gear selected.

Component choice plays an important role in the driveability of this package, but perhaps the most significant contributor is the recalibrated EcuTek ECU, which exploits the

full potential of the OEM computer without losing any of the safety parameters. It even adds desirable functions including launch control, full throttle shifting and rev-matching throttle blips on down-changes can also be offered.

There has certainly never been a faster or more powerful MX-5 available brand-new. With a power-to-weight ratio equivalent to a Porsche Cayman S, a well-driven GT270 has the ability to worry supercars. BBR concludes by describing its conversion this way: 'Cohesive, rapid and understated, the GT270 is the ultimate road-legal MX-5, providing the allure of the BBR Mazda turbo pedigree to an all-new audience.'

CONTACT:
www.ecutek.com
www.bbргti.com



Steve Neophytou, better known as 'Stav', is a professional motoring journalist and life-long petrolhead. He has been writing for UK tuning magazines for over ten years and was previously deputy editor at *Redline* magazine.



My love/hate relationship with drifting...

I love going sideways. For me the adrenaline rush of being beyond the limit but still in control is more fun than anything else you can do in a car. Like it or not, oversteer, powerslides, drifting, whatever you want to call it, often isn't the fastest way around a corner but it is the most fun way around. And from a spectator's point of view it's certainly the most visually exciting; drifting always gets the crowd going.

Despite my love for it, there are some aspects that drive me flippin' mad, though. Some because they affect everyone associated with drifting and some purely because so many more people (even people who are already part of it) would enjoy it much more if things were a little different...

While I'm not a JDM fanboy by a long shot, one thing the Japanese have pretty much 100% correct is their drift scene. And

if we, as drivers, as fans, as organisers, could have the same attitude to it as they do, things would be a lot better.

My problem mostly boils down to people's reasoning for why a car performs as it does when drifting. In Japan they rightly say drifting is 90% driver skill, 10% car spec. And they embrace this in every aspect – from practice days where it's normal to see low-power, basic-spec cars drifting with absolutely mind-blowing skill to high end competitions where the cars are surprisingly low power and basic compared to UK competition cars but the action is so much more impressive to watch and the driver skill is so much more apparent.

In the UK, however, we've got a huge tendency, whether it's due to over-confidence or simply ignorance, to blame the car's specification for everything. Because of this, massive-spec cars being

driven in hugely mediocre ways is the norm here. Even newcomers to the drift world have it in their heads before they even get behind the wheel that a car needs big power, huge amounts of lock and a hydraulic handbrake.

Well, let me tell you, they're wrong. Lower-power, lower-spec cars entering corners at high speeds using massive Scandinavian flicks, like you see in Japan, is a whole lot more fun both to do and watch (not to mention cheaper) than seeing a big-power car doing a skid on the handbrake, then smoking its tyres around the track with just a lazy stab of the throttle.

It's a good job there's no UK versus Japan drift events anymore, as if we went by their rules, our top cars would be hugely embarrassed by cars with half the power and specification, but driven by guys who truly push them to their full potential *

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LETTERS >>>

QUESTION OF THE MONTH

WHAT IS THE BEST 4WD JAPANESE CAR EVER MADE?



Dan Wainwright Impreza Spec C, Evo 6 Makinen and Nismo Z Tune R34 GTR

Like · Reply · 1 · 18 hrs



Martin Budge I'm just gonna leave this here 😊



Like · Reply · 1 · 18 hrs



Stuart McKay Toyota Celica ST185 GT-Four

Like · Reply · 6 · 20 hrs



Aaron Onelli Toyota Landcruiser

Like · Reply · 3 · 20 hrs

Want to have your voice heard? 'Like' our Facebook page (www.facebook.com/banzaimagazine) and keep your eyes peeled for our next question.



Euan Jeptoo As much as I love Subaru, I have to stand out here and mention the Mitsubishi Lancer Evolution X. With its 659cc Turbocharged 4-cylinder 4A90 engine producing 62 bhp, it may not be the fastest car on the streets, but it definitely is one of the most interesting.



Max Bradley Mine!



Like · Reply · 17 hrs



Paul Stevenson Without a shadow of doubt, it's got to be the Nissan Skyline GT-R R34

Like · Reply · 1 · 20 hrs



Aaron Turk Lawrence R32 GTR. When rules are changed to stop a car racing you know it was a good car.

Like · Reply · 63 · 20 hrs

T SPORT GETS SPORTIER

Hey can you recommend anywhere/anyone who produces or sells performance engine parts for the Toyota Corolla T Sport (see mine in the attached photo)?

Nigel Montgomery,
via Facebook

Thanks for getting in touch Nigel. Your E120 Corolla looks great. The 1.8-litre 2ZZ-GE engines are renowned for being highly tuneable, even acting as the base lumps for certain Lotus Elises!

The obvious choice for tuning parts in the UK would be Fensport (www.fensport.co.uk), who is well known for being one of the most popular Toyota

tuners in the country. Aside from that, we'd recommend looking at Funky Power (www.funkypower.co.uk) and Jap Performance Parts (www.japperformanceparts.co.uk), who both seem to offer bits like exhaust systems and air filters.

We're not sure how far you're going with the tuning of your car, but we've seen some awesome supercharged examples over the years. If you're planning to get this serious, we'd recommend checking out some of the forums where there are a few well-documented builds to check out. Good luck, and let us know how you get on!



CONTACT US

Do you want to comment on what you like in Banzai? Have you got a suggestion that you think would make each issue even better? Do you need our help with technical queries or advice, or do you just want to share something cool with the community at large?

Then please feel free to contact us using one of the following methods:

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DON'T BREAK YOUR BRAKES

Do you guys know what type of detailing products I should use to keep my anodised brake calipers clean? I've tried a few products now and some of them appear to be removing the colour from the parts.

James Meadows, via email

Great question, James, and something we've been thinking about a lot ourselves lately, too. Anodised car parts are becoming increasingly common, especially on JDM cars, and there are a lot of good reasons for this. The coating created on aluminium alloy parts using this process is stronger and lighter than most other forms of preservation on the market, not to mention more environmentally friendly, too. But with numerous reports that certain cleaning products were damaging the outer surfaces of calipers, brake wizard Tarox decided to run a few tests to see which products were best for cleaning anodised parts.

One caliper was submerged

in an acidic-based alloy wheel cleaner, and another was placed in a non-caustic, alkali-based cleaner (Autoglym's Custom Wheel Cleaner, to be specific). As you can probably see from the results, the acidic-based cleaner eventually began degrading the surface, with the alkali-based product coming out unscathed.

So check very carefully when buying cleaning products for your anodised parts, and avoid the acidic ones at all costs!



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GDB SUBARU IMPREZA SPEC C

Spec C Imprezas command big money now thanks to their undiluted motorsport pedigree. We examine perhaps the purest and most sought after of them all, before taking it for a quick spin...

Words and photos: Sam Preston

Working your way through the back-catalogue of various Subaru Impreza models that have been released over the years can be a frankly confusing affair to say the least. Some of the most interesting variants to us (and the majority of Subaru owners, it seems), however, have always been cars carrying the fabled 'Spec C' badge.

This homologation-special spec level took over from the WRX STI Type RA found in the first-generation (GC8), but incorporates the very same ethos: reduced weight and improved performance at the expense of the majority of mod cons. The easiest way to spot a Spec C car is by their small air flaps situated at the front of the roof.

Car and Custom Garage has freshly imported one of the rarest of all the Spec Cs ever produced – this 2002 'gravel spec' GDB, which remains in near-original condition with its dinky 16" steel wheels and comprehensive weight loss programme. We headed over to check it out for ourselves...



In Gran Turismo, we look back at some of the most iconic Japanese cars ever created





WHY IS IT SO SPECIAL?

There's a reason that well-looked after, road-going Spec C Imprezas are so rare nowadays. The JDM-only cars were effectively Group N rally cars with rear seats added in the space a roll-cage would otherwise sit, meaning that the majority have understandably ended up living a life of fierce competition in the guise of full-on rally cars.

This also means that the cars were sold with almost none of the frilly bits that we're used to in normal WRX STIs – no radio, no electric windows, no alloy wheels... you get the picture. The mechanicals of Spec C cars, however, didn't follow the same back-to-basics approach. Far from it, in fact. Rather

unbelievably, tucked away under the unassuming bodywork of this car sits a screaming semi-closed deck EJ20 STI engine, which is enhanced with factory forged pistons, bigger port heads and more fiery camshafts. Spec Cs also came with a VF34 ball-bearing turbo, all of which pushed power (unofficially) comfortably up to and perhaps even breaking over the 300bhp mark.

And that's not where the performance surprises end. This Spec C also boasted a plated rear differential, higher caster front suspension arms, a quick steering rack, a close ratio gearbox and even lightened glass and body panels throughout. There's no

doubt about it: Spec Cs were built for performance and nothing else.

This 'Bug Eye'-shaped car was one of the first Spec Cs created. And when opted for with the 16" steel wheels as seen here, Subaru even dropped ABS and added a DCCD (Driver's Control Centre Differential) for ultimate, pure driver control. It's no wonder proud owner Nik snapped this car up after trawling through the Japanese auctions for several years in search of his perfect Spec C, then, and thankfully plans to keep it tucked away in pretty much an original state to no doubt act as an extremely rare piece of car history in the very near future.



"It really does go well! If you compare it to the New Age UK-spec cars, it feels better in terms of road input"

HOW DOES IT DRIVE?

Walking around the car, with its basic (but pristine) white paintwork and distinct lack of bolt-on bits that normally define the WRX and STI models, it's difficult to see why this is such a special motor at first glance.

After opening that flimsy driver's door and getting comfortable in the STI seats (perhaps the only things that give this car's game away), you're faced with a dash so basic it makes a Suzuki Alto feel like a Mercedes S Class. Aside from the functional MOMO three-spoke steering wheel and DCCD switch in the centre console, there's little that grabs your attention.

Not the most inspiring of starts, then, but things only get better from here. A hint of the signature Scooby burble can be heard after turning the key thanks to a genuine STI Genome exhaust system (one of Nik's only modifications to this car). Even crawling along at a slow speed, the Spec C feels tighter and more urgent than other Imprezas we've driven. This is thanks to the 13.1 steering rack and tight-as-a-drum gearbox, along with that distinct lack of weight, of course (at 1290kg, this car weighs in at almost 200kg less than the equivalent JDM WRX STI).

But nothing could prepare us for the savage acceleration that comes from flooring the car in a low gear. The revs rise at an alarming rate thanks to a combination of all those free-flowing engine enhancements plus the lack of mass to drag around. It's far more eager to rev up, with an abundance of power on tap right up to that 8000rpm redline making for a fantastically rewarding drive.

Nik has driven far more Spec Cs than us, so gives us his somewhat more educated verdict on the car. "For what it is, it really does go well!" he begins. "I think it's similar to an older [GC8] car, but I prefer how its slightly bigger proportions make it feel more stable. If you compare it to the New Age UK-spec cars, it feels so much better in terms of road input."





Performance:
300bhp (approx)
283lb ft of torque

Engine: 2.0-litre semi-closed deck EJ20 boxer engine, I-HI VF34 ball-bearing turbocharger, factory forged pistons, big port heads, revised STI camshafts and inlet manifold, AVCS (Active Valve Control System), 50-litre half saddle fuel tank with anti-surge fuel pump assembly, 12-litre intercooler spray bottle

Transmission: Six-speed close ratio gearbox, DCCD (Driver's Control Centre Differential), lightened propshaft, gearbox oil cooler

Chassis: 16" Subaru steel wheels, 205/55/16 Yokohama Advan Neova tyres, Sumitomo four-pot front brake calipers, ABS delete, high-caster front alloy suspension arms, revised front subframe with 13.1 steering rack, strengthened front strut towers

Exterior: JDM WRX STI Impreza shell, lightened panels, sound deadening removed, no boot trim, Spec C roof vent, no rear spoiler

Interior: STI reclining bucket seats, airbags removed, MOMO three-spoke steering wheel, stereo removed, central locking removed

Car and Custom GARAGE

After spotting this car at Castle Combe's recent RallyDay event, we knew we just had to track down the owner. This led us to Nik Baker of Car and Custom Garage, based in Keynsham near Bristol. And following a drive over to the garage, we were faced with what appeared to be a treasure trove of all things Spec C.

Following a successful career as a mechanic in various Japanese car garages, along with participating in several different motorsport events in Imprezas, Nik began building something of a name for himself as a Subaru expert. Car and Custom Garage was therefore born around three years ago, and acts as Nik's base to import, tune and restore Imprezas from around the south west and beyond.

We noticed that most of the impressive road and competition cars currently in his shop are of the Spec C variety, with Nik confessing they're a personal favourite of his: "I try to use as many Spec C parts as possible on any tuned cars I have in as they're awesome!" he admits.

Contact: www.carandcustomgarage.com



BUYING A SPEC C

Spec C guru Nik outlines the current situation when it comes to buying one of these very special cars in the UK...

- **2003 STI 8 Spec C**
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TYPE R GROUP TEST >

“
Let’s do a track-based comparison test,” the editor suggested. “Let’s do it at Bruntingthorpe. It’ll be fun.” Well, I didn’t need asking twice! The idea was to assemble a handful of rivals to the hottest property in hot hatch land right now: yes, we are, of course, referring to Honda’s outrageously powerful, and finally available to buy, fourth generation Civic Type R.

Organising a test like this is not an easy feat, though, as juggling the vagaries of track availability, editorial staff to assist, and buttering up the relevant PR folks to entrust us with their prized press car can see such plans unravel before we’ve so much as checked the weather. Ah, the weather...

Serves us right for running this test in British ‘summer time’, I suppose. Either way, we arrived at Bruntingthorpe to test the Type R’s track capabilities alongside three key rivals under gloomy grey skies, which

continued to dump sporadic rain showers throughout the day. Ho-hum.

If you’ve ever driven Bruntingthorpe in the wet, you’ll know that it is extremely slippery in places, with grip dropping off rapidly on the runway sections thanks to the old-fashioned patchy asphalt surface which has soaked up years and years of aircraft emissions. Imagine the grip coefficient when old slipper meets wet linoleum floor, and you’re not far off. This explained our difficulty in approaching the manufacturers’ quoted acceleration times (well, that and mechanical sympathy), but it magnified the chassis balance of our quartet, so the exercise proved hugely informative, and was definitely be a lot of fun...

THE RIVALS

So, which rivals to pitch against Honda’s hottest ever hatch? From the Japanese corner, we decided to go for the Subaru WRX STI, taking a different approach to the typical ‘choose a group of FWD hot hatches’ method.

With a similar power output, price point and the only one with a rear spoiler to rival the Civic’s, the latest WRX should be on the list for anyone considering buying a £30k performance family car.

As should the Volkswagen Golf R. Whilst mechanically similar to the bewinged Scooby – also four-wheel drive, 300bhp – it’s difficult to think of a more divergent philosophical approach. Where the Subaru is all boisterous rally rep, the Golf remains the sober suited sophisticate. Both should be a stiff test for the Type R. And as if to prove that the same base ingredients can be served in many different flavours, BMW’s M135i delivers more power in a RWD chassis – in this case married to an eight-speed automatic gearbox. We asked BMW for the very latest face-lift model but it was sadly unable to provide one, so a huge thanks go to our friends at Evolve for the loan of their previous generation – but still very much state-of-the-art – M135i.



•••

THE RIGHT TYPE

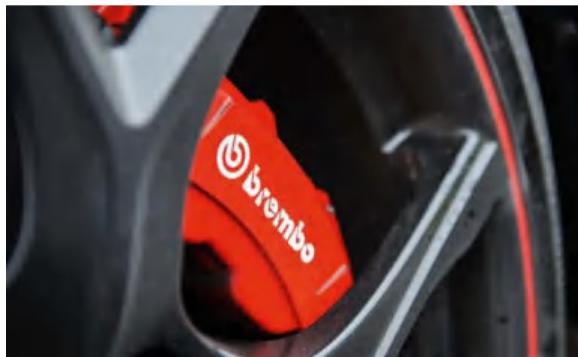
The new Civic Type R is set to raise the bar when it comes to hot hatches as we know them, but just how good is it against the current competition? We find out at Bruntingthorpe Proving Ground...

Words and Photos: Stephen Hall

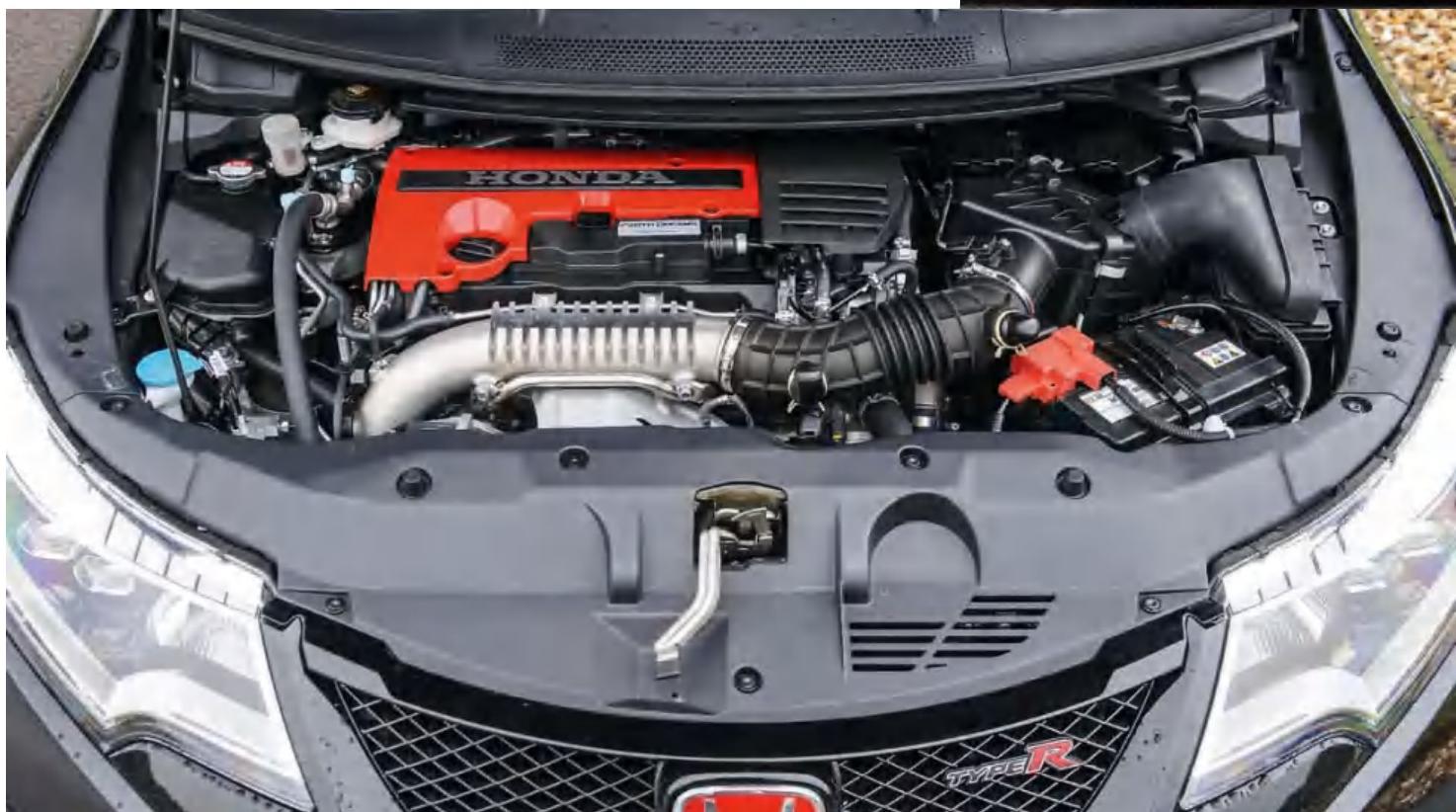


TYPE R GROUP TEST >

The wild, angular exterior styling isn't going to please everyone but you can't deny this pocket rocket's super-purposeful appearance



Below: New boosted engine retains some old-school VTEC excitement while adding much more power





Track-focused yet comfortable interior ticks all the right boxes for a fast road car

BEHIND THE WHEEL

And so to the track. We decide to conduct some impromptu acceleration tests. Although the manufacturers' own figures give us an idea of what to expect, we are particularly interested to discover how easy (or not – yes, we're looking at you Subaru) they are to launch. We also want to push the cars up to, and beyond, their limits on track to see just how 'hot' those hot hatch credentials really are, and to see where the car of the moment sits amongst this lot.

Perhaps inevitably, I make a beeline for the Type R just as soon as the photography was wrapped up, racking up some track time. I'd only sampled a brief drive on road in one before and the exuberant character of the Honda left a strong impression: that of a car full of vigour, rather more track optimised than the class norm, and so it proved...

From the moment I got behind the wheel of the Type R, I'm left in no doubt that this is by far the most track-focused car here. The seats are sensational – comfortable, supportive in all the right places, and with huge side bolsters that keep me firmly in place when the g-forces are trying to throw me across the cabin. The wheel adjusts to the perfect position and feels good. The pedals are almost ideal – my only gripe is that there is a touch too much distance between the

brake and accelerator. And if there's a better, more natural place to locate a gear lever (possessed of a wonderfully short throw) it's yet to be discovered in this class. It's fair to say Honda has the base driving environment covered then; the contact points are superb.

Let's get straight to the Type R's main talking point: the engine. It's great. Of course it lacks the aural thrill of the normally aspirated VTEC four-pots of yore – all modern fours do – but in terms of power delivery and character it really delivers. A solid wall of turbocharged torque comes in from 3000rpm, backed by an appetite for revs quite unexpected of a Turbo – it's all too easy to run into the 7000rpm limiter thanks to the rate of acceleration, and the fact the power never tapers off. And you know what? It sounds fine – it's hardly inspiring, but it possesses an aggressive, tough, mechanical note entirely in character with the Type R's progress. It's properly quick, too; the figures are there for all to see (0-60mph in 5.7secs, 167mph), and as long as you've selected a ratio which sees you above the sub-3000rpm turbo slumber your reward is a constant, increasing, almost VTEC-like increase in forward momentum.

With so much power on tap the front Continentals can get a substantial workout, so Honda employs a clever 'dual axis strut'

system to dial out torque steer – 50% less than the standard Civic. On track, the lack of torque steer is admirable – with finesse, it's possible to drive right up to the edge of the front axle's grip and manipulate the throttle to keep it there. The limited-slip diff aids traction and the steering remains faithfully precise unless you're deliberately clumsy with the throttle in a slow corner – at which point it's quite possible (in the wet at least) to light up both front tyres and head straight on regardless which way the wheels are pointing.

Heading off the super slippery runway and onto the nicely surfaced inner track section, the Type R came into its own. Through the really quick stuff it feels stiff, accurate and composed, like it's channelling its touring car cousin. Braking deep into a third gear right-hander, the front end finds fantastic grip, and the rear takes up some slip angle to rotate us into the apex. It's brilliant fun. A more lurid approach sees the rear take on any angle of attack you desire, easily recovered with a bootful of throttle. The superb brakes complete a dynamic picture that reveals a really satisfying driver's car, a car with a surprisingly exuberant on-track character thanks to that immense front end grip, mobile rear, and raucous power delivery married to a flick switch gear change.

TYPE R GROUP TEST >

HOW THE OTHERS COMPARE

The BMW could hardly be more different. There's no denying it has the strongest powertrain – it simply cruises away from anything else here in a straight line – and it's a joy to use, thanks to the sonic qualities of the straight-six and the fantastic ZF eight-speed auto, which is crisp and responsive. But where the Honda is feisty and frenetic, the BMW is cultured and mature. After the Type R's edgy stiffness, the M135i feels languid and imprecise in the corners. That's a little unfair as the BMW is possibly the most grown-up car here, but as a track car it's not sharp or communicative enough to be really good fun. Of course, being rear-wheel drive it does have one trick up its sleeve: power oversteer. It's a shame BMW doesn't offer a limited-slip diff, as it makes sideways antics a bit unpredictable. Ideally you need lateral load in the chassis before overloading the rear with power, and recovery tends to come with a little shake of the hips, as if the damping isn't quite firm enough to kill the yaw first time. It's fun, but you sense the M135i would be happier on the road where the open diff makes more sense.

Conditions like this should play right into the hands of the remaining four-wheel drive contingents, so I jump into the Scooby next to see if a wet track will reveal a more engaging side to its dynamic makeup. We ran an in-depth test on the WRX earlier in the year and were a little disappointed with the dynamics on a dry track but the initial impression is good. The seats are comfortable and suitably sporting, the Alcantara wheel falls nicely to hand and the gearshift feels positive. The cabin might be looking dated, but we're concerned with what's going on outside today...

Getting the Scooby off the line briskly proves tricky – not for a lack of traction, of course, but the laggy nature of the power delivery means lots of revs and clutch slipping are required. Find yourself in the wrong gear and it seems to take an age



We love that Honda has imbued the latest Type R with such an aggressive, edgy dynamic character



BMW M135i

0-62mph: 4.9 seconds

Top Speed: 155

Price: £32,685



SUBARU WRX STI

0-62mph: 5.2 seconds

Top Speed: 159mph

Price: £28,995

before the boost arrives (the remaining trio would be long gone), then power comes in a torrent from 4000rpm to the 6500rpm cut out. It's exciting, but makes it tricky to get the best out of it.

The WRX's biggest problem is revealed when pushing ten-tenths on track. The initial heft to the steering – which implies a strong, grippy front end to lean on – disappears under pressure and washes out into understeer, cured only by trimming the throttle or a dose of handbrake (don't try this at home!). With the inconsistent steering

delivering little in the way of feel, no rear limited-slip diff, and precious little throttle adjustability the WRX proves a bit one dimensional on track. Whilst there's fun to be had in its frenetic delivery, and you can lean on the four-wheel drive traction, it lacks the biddable nature to satisfy a keen driver.

Which leaves us with one more protagonist in the German corner: the Volkswagen Golf R. You'd be forgiven for thinking the sober suited Golf might be a bit dull, for the elegant-but-restrained exterior merely hints at the R's 300bhp powertrain. But a few laps

of the sodden track reveals a really enjoyable car; it finds great front end grip so you can hustle it into the apex more often than not, and there's enough poise and adjustability to bring the rear into play if you want. The Golf's Haldex four-wheel drive system ensures terrific traction, although it never quite manages to oversteer under power – the system is set up to send power to the rear only when the front loses traction. It's nicely damped and the quick steering feels natural and intuitive; it's easily the second most enjoyable car here on track.



VOLKSWAGEN GOLF R

0-62mph: 5.1 seconds

Top Speed: 155mph

Price: £30,820

TYPE R GROUP TEST >



Despite the lethal combo of treacherous track conditions and FWD setup, we managed to pull some seriously impressive acceleration times from the Civic



HONDA CIVIC TYPE R

0-62mph: 5.7 seconds

Top Speed: 167mph

Price: £29,995



VERDICT

There are no prizes for figuring out the clear winner amongst these four. The looks are divisive and the way it drives might be too much for some, but we love that Honda has imbued the latest Type R with such an aggressive, edgy dynamic character. On track, it's possessed of genuine depth of ability, and everybody who drove it climbed out with a big smile, trying to devise another excuse to get behind the wheel. Others in the class may be more rounded, but if you're a VTEC fan at heart then latest Type R will appeal to your very core *



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NISSAN R35 GTR TUNING

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① Featured: "Ultimate" Intercooler Kit

R35 GTR INTERCOOLER KIT BY PRO ALLOY

It's always been our intention to do something a bit special with this car as its tuning potential is immense and they seem to be falling into the hands of Nurburgring bashers, track day nuts and fast road enthusiasts alike and for sure its going to be fairly hard to find an un-modified car in a year or two. With this in mind we thought it would be a neat idea to build our new range of products so everything is reversible... by this we mean you won't have to cut, bend, adjust or modify any part of the car to fit our parts and with regards to the intercooler kit, there are no modifications required to the OEM plastic cowlings or alloy bumper bar so of course, no compromise to safety. Everything you need is supplied in the box and when you are done with the car, take the kit off and sell it! For the intercooler, we have built two different versions, The "Pro" and the "Ultimate". Both coolers have the same core and hand-built end tank design, and are supplied with an alloy air scoop fitted to the cooler and of course all the mounting hardware to fit the cooler. The main differences are in the pipe work...

"Pro Spec" Intercooler Kit Most of the original boost pipe work and oem filters (or aftermarket) are retained - this kit is ideal for those not aiming for 4 figure BHP levels or for people who may have already invested in an aftermarket boost pipe and air filter set up. £1914 inc VAT

"Ultimate" Intercooler Kit Boost pipes, bespoke air filter pipes and filters, silicone hoses etc are supplied with this kit, but the big advantage of this set up is the configuration as we re-route the flow of the cooler making a much shorter and more responsive boost pipe run, we also re-site the air filters to grab more cold air from the front of the car and supply complete with 80mm MAF pipes, ideal for 4 figure BHP cars! £3300 inc VAT

R35 GTR PRICES - ALL PRICES INCLUDE VAT

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SHOW REPORT: SEMA 2015 >

WHERE? Las Vegas Convention Centre, Nevada, USA

WHEN? 03-06/11/2015

CONTACT: www.semashow.com



SHEER SHOW STOPPERS

The annual SEMA show seems to get bigger and better every year, and 2015 was no exception, with plenty to take in no matter where you looked...

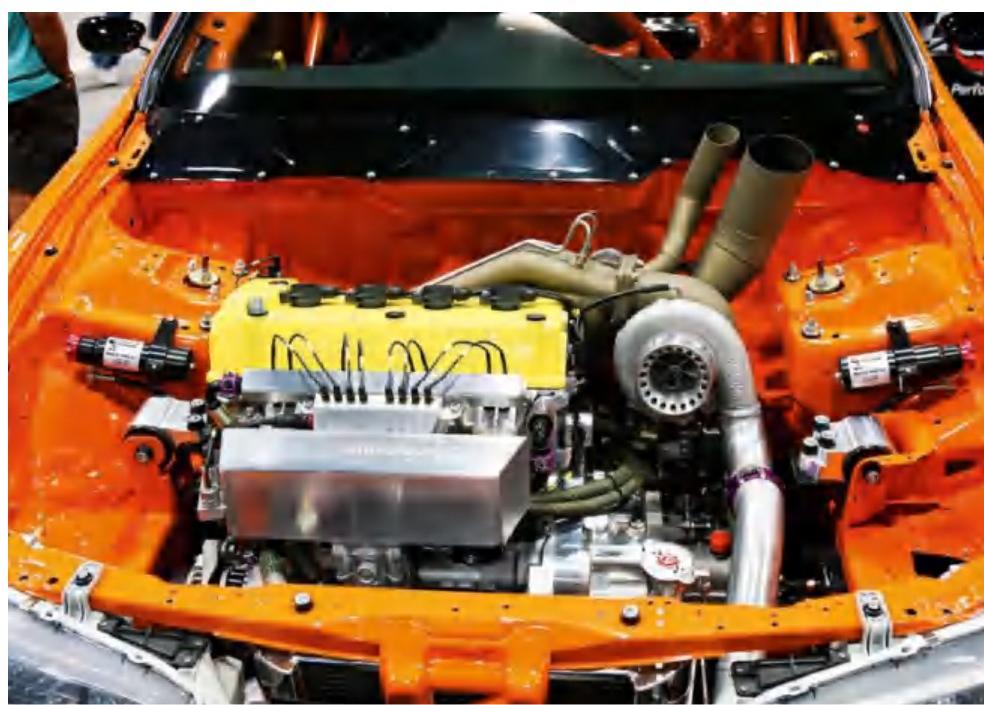
Words: Simon Holmes **Photos:** Andy Basoo and Simon Holmes



Left: Ken Gushi's Formula Drift FRS on the Rays wheel stand



Above: The mix of J-Tin, muscle and Euro metal makes SEMA unrivalled



Rywire's DC2 (above and left) set the bar high, featuring incredible engineering throughout



t's a well-known fact that the Specialty Equipment Market Association, better known as SEMA to you and me, hosts a yearly show out in Las Vegas that makes all other shows appear minor in comparison. It's the sheer vastness of it all that sets it apart from other shows. There are halls upon halls filled with display stands, show cars, top-notch products and people, all of which you feel the need to stop, look and take in.

Let's get one thing straight: there's a lot of headline show cars at SEMA. And we mean an awful lot. Amongst the vast amounts of American muscle cars, hot rods and other assorted Euro beasts to appreciate and take inspiration from, there are always some crucial Japanese builds that never fail to grab our attention.

Among the highlights this time round was undoubtedly the big unveiling of the highly publicised Datsun 240Z build that is owned by *Fast and Furious* franchise star Sung Kang, or Han Lue, as he's known in the films. Powered by a heavily tuned, naturally aspirated RB26, it turns out Sung is a true car enthusiast and his classic modified Datsun wooed the crowds all week with its amazing attention to detail.

We also couldn't take our eyes off Rywire's jaw-dropping DC2 Integra Type R which was finally unveiled after a lengthy and well-documented build process. The immaculate car was rocking a heavily boosted K20 lump, mated to a Quaife sequential paddle-shift gearbox to help handle the 700+bhp going through the front wheels. Needless to say, this was undoubtedly one of the cars of the show for most.

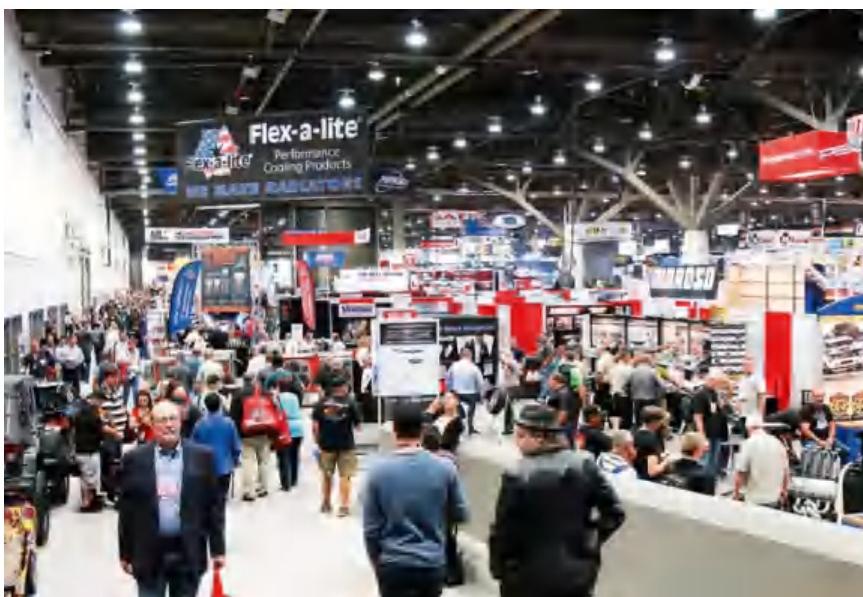
Elsewhere, there was a plethora of varied makes and models, featuring a host of different styles and trends, the best of which are pictured here. Safe to say, judging by this year's spectacle, we're already looking forward to the next one *

SHOW REPORT: SEMA 2015 >

The punters went wild for Sung Kang's RB26 240Z build (right)



Wild green Evo (above) on the Exedy stall looked like it had a few secrets under its bonnet...



Above: The fun continued into the outdoor area, where some of our favourite cars were found



Below: The Lexus stand always contains a few gems, like this striking modified GS F super saloon. We want!



Right and below:
Is this the most
complete street
Supra in the world? Quite
possibly. Just
look at that
engine bay!



SHOW REPORT: SEMA 2015



It was great to see a number of brand-new MX-5s being modified, including Flyin' Miata's offering here



Left: Rocket Bunny-clad GT-R was one of many of Nissan's supercars on display



Stancework's 'Rusty Slammington' BMW (above) was one of the highlights of the non-Japanese cars



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545BHP JTCC CIVIC TURBO ➤



BOLD APPROACH

When Marc Hadfield bought this Civic Ferio 14 years ago, he was just planning a simple fast road project. It's safe to say he got a little bit carried away...

Words: Daniel Bevis Photos: Matt Woods



545BHP JTCC CIVIC TURBO

If you're into hot JDM motors – and, given your choice of reading material, it's a fairly safe bet that you are – then there's a good chance you've crossed paths with *Best Motoring* at some point. This Japanese magazine and video series was launched in 1987 and ran right through to 2011, showcasing some of the more offbeat and unusual elements of racing and tuning in the Land of the Rising Sun along with the best of the mainstream; from brutal touge battles to the smoky crucible of the JGTC, via D1 drifting and Formula Nippon single-seaters, if it was shouty and Japanese, *Best Motoring* and its sister titles *Hot Version* and *Video Special* wanted to share it with you. The franchise has cult status, and its influences can be felt in countless builds that we've featured over the years – not least the perky Civic Ferio you see before you. Just ask Marc Hadfield, its proud and dedicated owner.

"Yes, I was into those videos," he recalls. "Let's face it, who wasn't? They were so cool – I watched a few rounds of the Japanese Touring Car Championship (JTCC), which is a great race series, and I couldn't believe that Honda had entered the Ferio saloons in 1993. I was in love, I needed my own race car." Sometimes a spark of inspiration like that is all it takes to set an enthusiast down the road of building a fresh new project... although Marc may not have foreseen just how in-depth the build would become.

Like so many people we speak to, the keenness for high-octane mischief and dirty fingernails stemmed from childhood. "My dad got me into tinkering with cars when I was a kid, so when I started driving my cars were always fettled to some degree," he explains. "I tuned a Peugeot 205 Rallye, my second car, with good results when I was 18, and that really boosted my confidence – it was such a light and nimble machine, shaming lots of much better cars on the local back roads. But then everything changed when I drove my friend's Honda CR-X VTEC..."

This turned out to be a pivotal moment for Marc, something Samuel L Jackson in *Pulp Fiction* might describe as "a moment of



clarity". The high-revving B-series, the taut chassis, the precision... it made his beloved old Peugeot suddenly seem rather woolly and vague. "It felt great the day before; after the CR-X it just felt tired and flat," Marc laughs. That, of course, is the crushing inevitability of perspective. And Marc knew that he needed a VTEC in his life, pronto.

So back in November 2000 he set himself a modest budget and went hunting for a Civic VTi. It didn't go all that brilliantly, with every car that looked positive getting snapped up before he got there, but just when he'd reached the stage of becoming thoroughly fed up with the whole endeavour, Marc received a call from a dealer in Bradford who'd taken delivery of a Harvard blue VTi saloon. Needless to say, he was up there like a shot and, particularly taken with the

underdog potential of the four-door, there was never any doubt of it coming home with him. "It was tidy, and the engine was perfect – just like I'd imagined it would be having driven the CR-X," he remembers. "But it was also completely standard. And that just isn't me."

That, it turns out, is a masterful piece of understatement. Marc's initial plan was relatively humble, intending simply to build it up as a fast road car; no aesthetics, just money spent on performance upgrades. But all the while, the spectre of those old *Best Motoring* videos was hovering over his shoulder, egging him on, taking his hand and leading him down a dark path. "I started with



Completely reworked and boosted engine (above right) more than matches the car's eye-catching exterior





**“The standing joke with my mates is
that it’s now just like a retro
Touring Car, but faster”**



545BHP JTCC CIVIC TURBO >

basic breathing mods, but that wasn't enough, so I experimented with nitrous oxide, then B18 swaps with nitrous, but it always ran out before I got home. I got into building my own engines as my confidence grew, which led to nat-aspirated builds that cost thousands but lasted five minutes as they had to be revved so hard to get the power out of them! K-swaps weren't the done thing back then, so that's when I started thinking about boost."

With a friend, Ricky, just starting out with a fledgling tuning business, Marc offered his car up for turbocharging as a sort of guinea pig. "It was really fast when Ricky was done with it," he grins. "It had 380bhp, which was a monster step up even from nitrous. And the best thing was, despite what people said it would be, it was incredibly reliable. I thrashed it for three years with hardly a hiccup. Testament to Ricky's knowledge and mapping skills!" Naturally, of course, too much is never enough, and it was always inevitable that Marc's insatiable thirst for power would demand ever-deeper swells of horsepower.

"It was a crazy scene back then, not like it is now," he reminisces with a whiff of gentle nostalgia. "The aim back then was always to beat your friends on the local by-pass, and I got into track days as it was starting to get silly. But after a few sessions on track you quickly outgrow your car's state of tune, and so the performance of the car had to evolve in line with my increasing confidence and abilities. I began reducing weight and working on handling mods, new engines with more and more power; springs became adjustable coilovers, road tyres became semi-slicks, and then the aero mods began."

This is the point in the build where you can really start to see the influence of Best Motoring and, specifically, the JTCC. Look at the car's brightly coloured exterior and you'll spot a GT rear wing and diffuser, aero side skirts, a front splitter – Marc was really starting to get serious.

"Working in a bus garage means an abundance of alloy materials to play with for



aero modifications, along with some great colleagues willing to help with anything body related," he explains. "I learnt to rebuild just about every component on the car by trial and error – engines, gearboxes, suspension, it's been a great learning curve. I've always done the work myself as I'm a mechanic by trade, and have a lot of helpful like-minded friends. The owner of Race-Tech Motorsport is a close friend so turbo conversions were easy to have made up from scratch, and this is my second turbo setup and I think my ninth engine! When I wasn't happy with something, or it broke, I changed it."

All of this continuous evolution has led to a car that's boasting a fairly astonishing 545bhp, all wrapped up in the neat and lightweight Ferio package that takes a sound thrashing whenever Marc's behind the wheel. He drives it to and from every track event too, it's fully road legal and he's intent on keeping it that way ("no trailers here!" he beams). And with such a long and diverse history of evolution, of constant honing, tweaking and upgrading, it stands to reason that the thing is very far from 'finished'.

GAUGING REACTION

The question Marc gets asked most is: 'What is it?'. With four-door Civics becoming scarce, a lot of people don't know what it is, which plays neatly into his initial plans of championing the underdog. In addition, the livery is generally a hit: "It's Marmite, most people either love it or hate it," shrugs Marc, "but most will admit that it looks good up close!" It's the time and effort that he's put into the build that shouts loudest here – well, until people see it on track, when the performance speaks for itself. The car is a supercar-eater; with just 880kg to haul about, even superbikes struggle to keep the 545bhp monster! "It always gets a friendly reception at Santa Pod and Ten of the Best, having had a few class wins and top-three finishes over the years," Marc explains. "It's known as 'Lulu' on the Honda scene, and it's got a fair amount of international recognition too."





"It's been 14 years, and there's always something else I want to change," says Marc. "There will always be something that needs to be made more efficient or more reliable. And now I'm doing events like Ten of the Best, there's always things that need changing to keep up with the competition."

One thing's for sure, they'll certainly see him coming. Being effectively a race car with number plates, the Civic turns every head wherever it goes, thanks in large part to its boisterous livery. The colours are a tribute to T. Hara's Group A car, the BP Trampio Civic of the early 1990s; while Marc was having some rear arch corrosion treated and with the car requiring a little paint anyway, it seemed mad not to throw on a look that'd emulate the splendour of those old JTCC Best Motoring videos – why not, eh? When you've gone this

far, you just have to keep pushing for perfection. "The standing joke with my mates is that it's now just like a retro Touring Car, but faster," Marc smiles. And it's the smile of a man who's living the dream.

So with all this constant evolution, what do you think is next on the cards for the Ferio? A tweak to the suspension perhaps, or a fiddle with the timing? Oh no, Marc's always got something ambitious on the go. "The next step is to reshell it," he says, nonchalantly, as if that's all in a day's work. "I've found a really good shell for it. And then, with a stronger base, I can go even more extreme with the aero, integrate a lot more carbon fibre... I've got big plans." We don't doubt it. Indeed, it sounds like he's only just warming up – who knows what this effervescent little four-door will be like after another 14 years? *

Performance: 545bhp and 380lb ft at 1.9bar, 12.0 quarter-mile at 137mph on road tyres

Engine and transmission: B18C4 block, ITR crankshaft, Crower I-beam forged con rods, 81.25mm JE forged low comp pistons, King race bearings, fully balanced and blueprinted, P72 head fully ported and polished, full Skunk2 valvetrain, ARP head stud kit, Super-wanga head gasket, Edelbrock inlet manifold and 65mm throttle body, MSD Digital 6 ignition, Hondata S300 ECU, mapping by Ricky Lee at Race-Tech, Race-Tech custom turbo kit with Precision 5858CEA turbo, twin Tialsport 38mm wastegates, side-exit exhaust, Honda S9B gearbox with 4.4 final drive, Synchro-tech carbon synchro kit, Cusco MZ 1.5-way LSD, Spoon flywheel, LSD Motorsports paddle clutch, DSS level 5 shafts and hubs

Chassis: 7.5x17" Volk Racing GT-P forged split-rims with 235/40 (front) and 225/45 (rear) Nankang NS2-R, Daiyama monotube coilovers with custom Swift springs, Buddy Club camber kits, Super-wanga toe adjusters, EK9 front anti-roll bar, DC2 rear anti-roll bar, Whiteline castor kit, uprated bushes throughout, ITR five-stud hub conversion

Brakes: Hi-Spec Billet 4 brakes with 305mm discs, DC2 rear 260mm conversion, EBC yellow pads, braided lines, MB6 master cylinder

Interior: Stripped and lightened, PP Cages roll-cage, carbon fibre bucket seats, four-point harnesses, custom carbon fibre door panels, custom carbon fibre centre console

Exterior: Respray in BP official colours to replicate T. Hara's 1993 JTCC car, Fat-Tech GT rear wing, Fat-Tech rear diffuser, custom aero side skirts and front splitter housing large oil cooler and fan, Fat-Tech bonnet vent, Mugen rep front lip

Thanks: Everyone at Race-Tech for everything, the guys at work for the hours and hours of help, especially Fat-Tech, thanks to Matt at Spirit9 for the sponsorship, thanks to the wife for putting up with me for so many years, and a big shout out to the Built4Battle crew in USA



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WHERE? North Weald, Essex

WHEN? 20/09/2015

CONTACT: www.players-show.com



WELL PLAYED...

With fine weather, plenty of display space and an open door policy attracting all types of crazy cars, this year's Players Show was better than ever.



As the saying goes, time flies when you're having fun and it's hard to believe the Players Show celebrated its ninth birthday this year. The fact it still feels like a fresh-faced show is a testament to its approach. It's all very cool, calm and collected, and perhaps that's why it attracts some of the best British metal around. The one-day extravaganza is open to all makes and models but the exclusive hanger zone is set aside for the 100 best cars, pre-judged and pre-registered beforehand. This makes

Players feel really special as rarely do you visit a show where you can see a mint R34 Skyline GT-R parked up against a Mk1 Escort show car! But it all happened at Players and there really was something for everyone, with a truly eclectic mix of cars on display.

Whilst it was nice to take other fine cars in, it was the Jap metal we were most interested in and there was plenty to keep us happy including rare JDM models and heavily modified show cars sitting low on air-ride suspension sporting tasty engine conversions. There were a few Banzai

ex-feature cars we noticed, too, such as the retro and super-cool Toyota Starlet from last month's issue and the airbagged Subaru Impreza, featured back in the August issue.

Outside of the hanger zone there was a huge amount going on, too, and we noticed plenty of smooth engine bays and polished split-rims with a smattering of function-over-form builds and abused drift cars to mix things up.

As always, we were impressed and look forward to watching Players celebrate their tenth year in 2016... *



Above: This peppermint-coloured Evo VI caught our eye outside and certainly looked the part



Below: Ellz Henderson's AE86 rocks some solid rims for the ultimate retro look



We've loved Vinny's Accord since its feature back in November '14. It's looking a lot different now!



Above: Cars like this big-power RX-7 prove that Players isn't just about static show cars



Above: Smoothed engine bays seem to be becoming popular and they look even better when there's a turbo in there, too



Above: There aren't too many modified Nissan Paos about but they look wonderfully retro



SHOW REPORT: PLAYERS

Right: Mimms show founder Davinder's S2K sitting pretty on Mugen alloys



Above: AirLift Performance's eye-catching S14A was shod in a custom wrap for the show

Below: Likehell Design's founder Josh has an awesome 350Z to match his super-cool company



Right: Last month's feature car Toyota Starlet looked good as ever. We hear it's now due a 4AGE engine conversion



Above: Nathan Howell's stunning Impreza made it into the coveted hanger zone, home to the best 100 cars there. We featured it back in August this year



Leigh's bagged Del Sol is cleaner than Mr Muscle's bathroom

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1000+BHP R35 GT-R ➤





TRIED AND TESTED

What happens when a Supra specialist turns its hand to building R35 GT-Rs? It produces a Nissan with a spec list very different to most others in the UK, but one that's equally as impressive in its own right...

Words: Andy Basoo Photos: Stephen Hall

1000+BHP R35 GT-R



**"GT-Rs are the nuts!
It's all about how
they put the power
down and the grip
levels they have"**





Carbon spoiler and bootlip
add some purposeful
class to the sleek body

If you hear the name Garage Whifbitz, you straight away think of Toyota Supras. Proprietor, Paul Whiffin, has been turning out some of the UK's top JZA80 Supras for about 15 years now and his business continues to be one of the go-to specialists for Mk4s. So, why has Whifbitz decided to build an R35 GT-R? Well, first of all, we shouldn't be too surprised. The company has history of crafting stunning Nissans. One of our all-time favourite R32 GT-Rs emerged from the Whifbitz workshop in 2007 (see p62) and went on to grace the cover of the May issue of *Banzai* that year. Despite packing 1000bhp, it was a beautifully finished road car, one that would claim top honours at any show 'n' shine line-up it entered.

"The idea was to move with the times," Paul explained. "The R35 market was really picking up so we were looking to future-proof the business." As it happens, Whifbitz already had this GT-R in its possession. Paul had picked it up from a salvage auction with a blown engine. "Nissan recalled early European models because of a bottom-end bearing issue," he continued. "Instead of repairing them, Nissan just replaced them, so the market was flooded with engines at one point. The idea was to pick up one of the disused engines, drop it in this car and sell it on. When we decided to begin development work on R35s the plans changed."

Whifbitz started by stripping down the car's VR38DETT and found the only good bits were the heads. So, instead of sinking money into this V6, a bare block and crank were sourced. "We didn't want to follow what everyone else

was doing," Paul expressed. "Our idea was to use all the same principles and tuning formulas that we've found to be most effective with Supras. Most of the parts companies we use were already producing parts for the GT-R and the engineering specialists we work with can machine and fabricate anything so we wanted to use our tried and tested methods."

With crazy power figures the norm with GT-Rs, Whifbitz set a relatively sedate target output of 900bhp for its first R35 build. Maximum response and driveability was the goal. "What we do with Supras is build to max the turbos," Paul let on. "You don't want bigger turbos than you need as lag becomes more of a problem the larger you go."

Turbochargers from the Garrett GTX billet range are usually selected by Whifbitz thanks to them utilising the same ball bearing cartridge system that's been used in the 24 Hours of Le Mans, Pikes Peak, World Rally Championship and top-level drag racing over the years. When it comes to flow rates, power and durability, Paul finds the Garrett units exceed expectations every time. The GTX3071 is rated at around 1000bhp, making it the ideal application from the range for this particular R35 build.

Tial V-band exhaust housings, twin 3" stainless steel downpipes, two 76mm aluminium intake pipes, high-flow K&N filters and a Whifbitz 4" titanium exhaust system maximise gas circulation with a pair of Turbosmart Compgate 40mm external wastegates also in the mix for good measure. Ensuring intake temperatures are suitably low

1000+BHP R35 GT-R

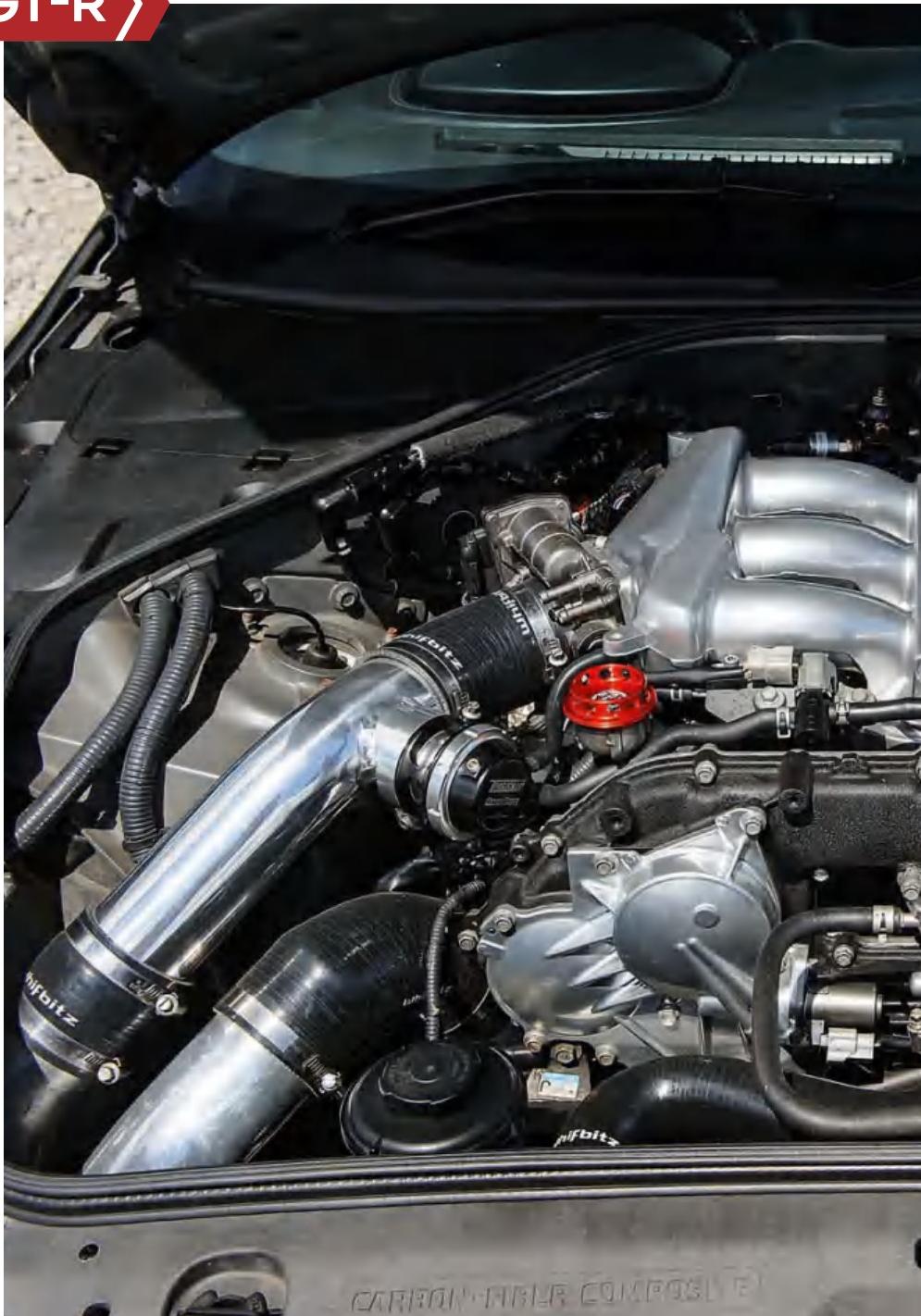
Engine: 3.8-litre VR38DETT twin-turbo, Syvecs S8 standalone ECU, Whifbitz 272 camshafts, Whifbitz big valve heads using Ferrea oversized valves, Ferrea bronze valve guides, Ferrea dual valve springs with titanium retainers, fully ported and flowed, Carillo H-beam con rods, Mahle Motorsport pistons, Titan Motorsports H11 main and head stud kit, HKS head gaskets Whifbitz GTX3071 twin-turbo kit using our own Whifbitz R35 GT-R tubular manifolds, Turbosmart 40mm wastegates, 3" downpipes, Asnu 1650cc injectors, twin Walbro 450iph fuel pumps, AMS fuel rail kit, fuel flex sensor, Fuelab 535 Mini fuel pressure regulator, Whifbitz 4" R35 GT-R titanium exhaust system, Whifbitz uprated R35 GT-R crossflow intercooler kit, carbon engine cover, chrome powdercoated inlet manifold and VVT covers, HKS oil cap

Transmission: Full PPG 1-6 gear set, GTC 16-plate clutch kit, Xtreme Motorsport circlips, T1 Race gearbox brace

Chassis: 9.5x20" (front), 11.5x20" (rear) 360 Forged Mesh 8 wheels in black, 265/35 (front), 305/30 (rear) Michelin Sport Cup 2 tyres, KW sleeve coilover kit, Top Secret adjustable rear lower arms, SuperPro adjustable front upper bush kit, Porterfield R4 race pads front and rear, Gulf Competition RF1000 brake fluid

Exterior: Carbon front spoiler, carbon bonnet vents, carbon grille, carbon side vents and garnish, carbon Zele-style side skirts, carbon Zele-style rear apron, carbon rear spoiler and bootlip

Interior: OEM R35 trim



and charge is as dense as possible is one of Whifbitz's own front-mount intercooler kit, complete with carbon fibre ducting, polished aluminium piping and black silicone hoses.

As for fuelling, a pair of Walbro 450iph pumps supply high-octane unleaded through an AMS rail and feed 1650cc Asnu injectors, with a Fuelab 535 Mini pressure regulator and fuel flex sensor playing their parts effectively in the high-volume process and enabling the use of E85 fuel.

Now all of that sounds great but a stock VR38DETT is only good for around 700bhp. The aforementioned upgrades are engineered for above the 900bhp target output. So, in order to achieve its goal Whifbitz was going to have to get busy internally, something it already knew and had planned for. It's also here that Paul and the team would lean on their Supra tuning experience, selecting proven components for big power builds.



Mahle Motorsport pistons and Carillo H-beam con rods have long been a winning blend in Mk4 circles so were installed here too, while Ferrea is the brand of choice for uprating 2JZ valves. So, Paul ordered up oversized valves, bronze guides, dual valve springs and titanium retainers.

While waiting for the parts to arrive, the V6's cylinder heads were taken into the machining shop and analysed before being fully ported and flowed. The GT-R responds so well to bolt-ons and engine mapping, that often owners leave it at that, but there's still a lot to be said for established tuning methods. Despite the electronic wizardry that takes place beneath the skin of the R35, it's still powered by an internal combustion engine, so techniques like the porting and flowing of the intake and exhaust ports to improve the quantity and quality of air flow are still valid. Rather than buying off-the-shelf items

Whifbitz also developed its own camshafts for this car too, optimising the setup perfectly.

Once the internals were on-site, the VR38 was assembled with HKS head gaskets and Titan Motorsport (big in the Supra game) H11 main and head studs commissioned to bind the setup together. The transmission got overhauled with a PPG gear set, GTC 16-plate clutch plus of course a set of uprated circlips, this time from Xtreme Motorsports, and a T1 Race gearbox brace kit added to help mount the masterful creation securely.

It was time to get the completed engine and gearbox arrangement back into the R35's 'bay, run-in and the car onto the dyno. Careful mapping was the first priority with a Syvecs S8 standalone unit allowing for all the adjustments and fine-tuning required. Only once this was complete was the dial turned up to 11, the culmination of which you can see the Whifbitz YouTube channel



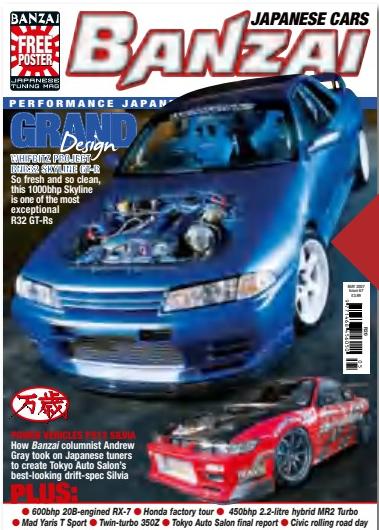
Left: A four-figure power output comes thanks to some old-school tuning methods



(tinyurl.com/whifbitzgtr). Not only are the results impressive, but the dyno run was nice and dramatic with huge flames filling the cell. Go check it out. Oh, and the GT-R smashed the 900bhp target with a heart-pounding 1012bhp output realised. Some of you may have spotted the R35 on our stand at Japfest earlier this year and will testify that while it's relatively discreet in its appearance the noise and pyrotechnics it emits are intoxicating.

Obviously, the chassis has been uprated to manage the additional power with Porterfield R4 race pads and KW coilover sleeves the notable inclusions. The beauty of the sleeve kit is that it allows for the retention of the GT-R's factory-fit, electronically controlled suspension setup, making it a great lowering solution. The 20" 360 Forged wheels are a welcome sight too, with these black Mesh 8s filling the arches nicely and complementing the carbon additions perfectly.

1000+BHP R35 GT-R



It's always heart-warming to see a 'quality not quantity' mentality adopted when it comes to styling and that's the case here. The carbon components Whifbitz has set in place add to an aggressive but classy appearance. In particular we're fans of the rear end. A Zel-style rear apron takes care of things lower down, but a clever combination of a carbon bootlip and rear spoiler adds nice detail to the GT-R's otherwise slab-like posterior.

So, considering that it's Mk4 Supras that are Whifbitz's bread and butter, how does the company's first GT-R stack up against its usual JZA80 offerings? "GT-Rs are the nuts!" Paul enthused. "It's all about how they put the power down and the grip levels they have. No, in fact it's the gearboxes that are most impressive. The changes are so rapid."

Spending time in this car has actually

inspired Paul and the team at Whifbitz to develop a new transmission setup for the Supra. "We've been working on a solution for the Mk4 as the gearbox options are a little antiquated in comparison to the GT-R's blink-and-you-miss-it shifts. We're using E90/E92 BMW M3 DCT gearboxes. The changes are just as fast as the GT-R and completely transform the driving experience of the Supra."

In talking to Paul it's clear that Supras are still in his blood. The impressiveness of this R35 build is not to be ignored though. Adopting the Whifbitz tried and tested Supra methods has worked wonders and allows the specialist to offer a slightly different approach to tuning GT-Rs. If you're an R35 owner and are looking to glean more power from your car, it's worth considering all the options before plumbing for the obvious. *

WHIFBITZ R32 SKYLINE GT-R (MAY '07)

Garage Whifbitz has long been known for its impressive Toyota Supra builds, but just over eight years ago it produced one of the world's finest R32 GT-Rs. We can confidently say that because up to that point, the most beautifully finished R32 we'd seen in the flesh was Phoenix Power's 900bhp icy blue example that stole the headlines at the Tokyo Auto Salon that same year. We shot the Whifbitz car just a few months later and it was not only as impressive as the one built in Japan, but in our eyes, slightly better.

The mission statement of the project was to compete with tuner-built track and drag cars, but while those offered uncompromised performance (usually it was the creature comforts and attention to detail that suffered), the Whifbitz Skyline was a work of art and one you'd quite happily live in. It had all the components akin to top-level Japanese competition vehicles like an HKS 2.8-litre stroker kit, Tomei 280° cams with 11.5mm lift and a pair of HKS-spec Garrett GT3030TS turbos.

But touches like the reduced wiring loom, smoothed bootlid, BMW Estoril blue paint and the replacement of every single steel bolt for rust-proof Allen head bolts made this R32 a cut above the rest. Its two-year ground-up build represented time and money well spent and proved you can't rush perfection. Whifbitz really knows how to build ground-breaking Nissans... *



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PART 5: THE ANGLESEY FINISHER

As the BDC took to Anglesey recently for the final round of the 2015 season, champions were crowned during the high-speed action; but just who, exactly...?

Words and photos: Robert Borowik (everythingdrift.com)

Back in September, the British Drift Championship roadshow headed over the Welsh border to the scenic circuit of Anglesey for the final event of the year. The coastal track was the fastest of the year, with the speed gun reaching over 60mph for the fastest drivers in parts.

Pro-Am class

The sun was out and everyone in the Pro-Am class was getting ready for their practice session. After a few runs into the session the drivers were nailing the line and increasing their speed throughout the course.

Qualifying followed on from practice with each driver getting two non-consecutive runs. Championship leader Adam Simmons was the top qualifier after scoring 86.5 on his first run. Fraser Stark wanted to take the championship away from Adam on the last day, though, and he qualified in second with a score of 82.0, giving him two valuable points. A surprise during qualifying was that Matt Walker came ninth with a score of 73.7. He had come up from Driftcup this year and was running just over 200bhp in his BMW E30. It takes some impressive driving to be able to link the track with such a power deficit to other competitors.

There were many close battles throughout

the Top 32 but all eyes were on Adam Simmons and Fraser Stark. Adam battled against Stuart Eggle and Mike Lardner before meeting Matt Walker in the Top 8. Adam ran wide on his lead run at the hairpin, narrowly missing the tyres. On his chase run another mistake handed the win to Matt Walker, so the championship came down to how well Fraser Stark finished. Fraser got into the Top 4 after beating James Mathewson, Mathew Denham and Tony Walker.

Joining them in the Top 4 was Ryan Pothecary following multiple battles with Kirsty Widdington. Stuart Farley rounded out the Top 4 after beating Lewis Mitchell, Richard McCourt and Wayne Curran.

Fraser put in a strong lead run against Stuart Farley before swapping positions and a great chase run was enough to get through to the final.

Ryan Pothecary and Matt Walker then battled to see who would take the remaining place in the final. Ryan chased first, closing in on Matt through clip three. As they entered the hairpin Matt Walker made a mistake. Ryan couldn't avoid him and made contact with the back of Matt's car. Ryan then put in a good lead run which put him through to the final.

Next was the battle for third between Stuart Farley and Matt Walker. Stuart put in a strong lead and chase run giving him the win and the final place on the podium.



The final battle came down to Fraser Stark and Ryan Pothecary. Fraser had run well all day and this battle was no exception. A fast lead run gave him the advantage. A great chase run in which he was right on Ryan's door was enough to get the win.

The drivers celebrated their results on the podium. Fraser Stark had won the event and collected enough points to win the championship by two points.

Pro class

As the Pro drivers headed out onto track for their practice session, the speeds were high and the track filled with smoke. After a couple of hours it was time for the Pro class to qualify. Everyone had two non-consecutive attempts in which to put down their best runs. This gave everyone a fair chance as it rained for a few minutes toward the end of the session.

Wayne Keeber was the fastest through the speed gun during qualifying, being clocked at 62mph. He got fifth place after scoring 88.5 on his second run. Keilan Woods qualified in first with an impressive run. A huge entry into the first turn and good speed resulted in a score of 89.8.

Championship leader Jack Shanahan only managed to put in one run as he had an issue selecting gears. A trip back to the paddock,



The sun was out for most of the weekend, meaning tyre shredding was the flavour of the event



Below: Wayne Keeber and his Soarer were fastest in qualifying



2015 BRITISH DRIFT CHAMPIONSHIP



Shanahan became the BDC champ despite numerous issues





Tony Walker gets a good angle in his Silvia



saw his team remove the clutch and gearbox and work tirelessly to get the car fixed in time for the battles. He qualified eleventh with a score of 85.5 – only four points away from first. This just shows how competitive the Pro class now is.

The championship-changing action then happened out on track while Jack's car was parked on the sidelines. Michael Marshall spun on both his runs, scoring zero, which took him out of contention for the championship. At that point Jack Shanahan became the 2015 British Drift Champion, although his team continued to fix his car. These guys are determined to do the best they can all the time, which meant fixing the issue and getting back onto track to battle in the afternoon.

After a short break for the drivers to prepare their cars the battles continued. Fraser Stark had another impressive day as he made it into the Top 8 after beating Paul Smith and Shane O'Sullivan. TJ Berney also drove well making it into the Top 8; he beat Shane Lynch and Gary Mills to make it that far.

Top qualifier, Keilan Woods, was on a mission to beat Tom Murphy in the Top 32 before going through several One More Times against Mark Luney. His day ended in the Top 8 against Simon Perry. Joining Simon in the



Top 4 was Jack Shanahan, Brian Egan and Martin Richards.

The first battle of the Top 4 saw Brian Egan and Martin Richards meet in a battle of the Skyliners. Martin put down a smooth fast lead run whilst keeping close proximity on his chase run to advance through to the final. On the other side of the tree, Simon Perry battled the newly-crowned champion, Jack Shanahan. Jack put in a great chase run, right on Simon's door. On Jack's lead run, as he came through the first corner, his rear left tyre came off the rim and as he transitioned onto clip three the rear right tyre came off the rim, too. After a quick tyre change he was back out for his battle for third place against Brian Egan. However his rear left tyre came off the rim during his chase run, unfortunately losing him the battle.

Simon Perry and Martin Richards went up against each other in the final. Martin led first with a great run. They swapped over and as Simon led into the first corner something went wrong. He ran wide and bailed out of the run letting Martin past. Clutch issues cost him the final battle.

The drivers took their opportunity to celebrate on the podium with Martin Richards in first, Simon Perry in second and Brian Egan in third. The team trophy went to the Drift Elite/ Evergreen Tyres team of Martin Richards, Mathew Denham and Joe Ankers. The Aford Awards 'Hard Charger' trophy was given to Matt Walker for his amazing driving, managing to peddle his E30 around the track and competing against some big name drivers in both the Pro-Am and Pro classes *

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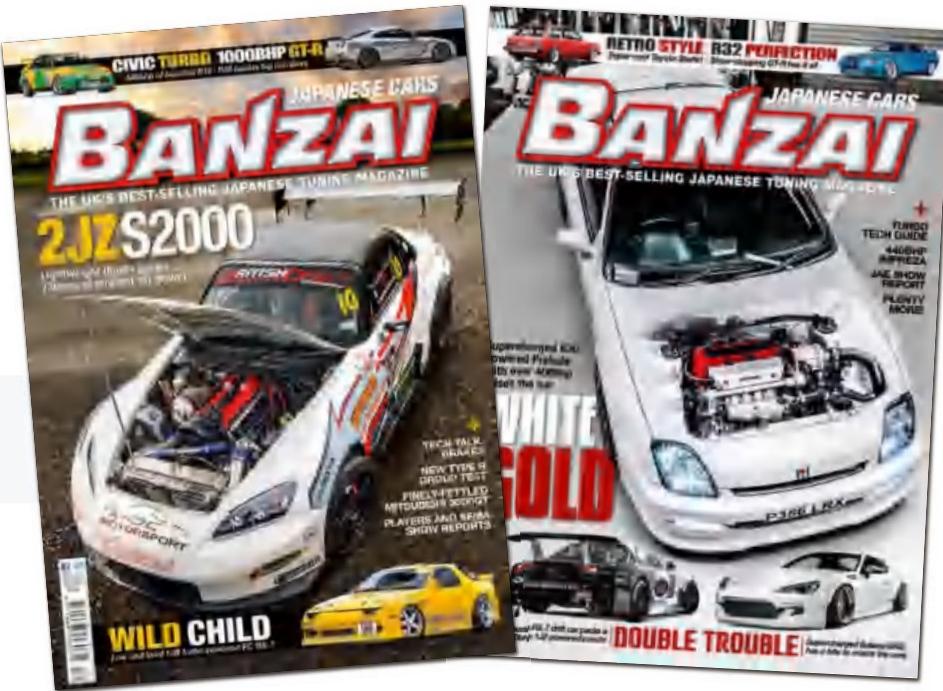
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2JZ S2000 >

EASY/D

With a dyno-proven 730bhp under its belt so far, this 2JZ-powered S2000 is not what you would call conventional, and nor is the man who built it...







"It's angry to drive and very grippy. I'm entering corners at 105mph now to get it to go sideways"

Have you ever noticed that some people in this world tend to go through life with a different attitude to the rest of us? It's rare to come across, especially in this day and age, but every now and then you meet someone that seems to have a more positive outlook on things. Where we might see a problem, they see a challenge or what we might perceive as a huge issue to overcome simply serves as a minor inconvenience to them and that's what sets them aside. They are the can-doers in life, the people who possess a combination of practical skills and positive attitude to take on just about anything.

With that in mind, it takes about 30 seconds of general chit-chat to safely make the judgement that Marcin Mucha is clearly

one of these can-do people. As he reels through the build details of his homebuilt, 730bhp, 2JZ S2000-powered drift car pictured here, there's a positively blasé tone to his voice. It could almost be mistaken as dismissive, if it wasn't for the polite demeanour, accompanied by regular hearty chuckles of laughter as he calmly explains how he shoehorned the iconic six-pot Toyota engine into the most unlikely of candidates. "It was quite simple," he tells us, "I don't know why it's not done more often!"

There's not even a hint of sarcasm in that statement either. To a man of Marcin's skill set and mindset, the 2JZ dropped into place with relative ease and, in doing so, created an instant monster capable of devouring tyres and Tarmac in equal measure. But then that was always the intention, as Marcin has built the

car to use in the British Drift Championship. Before this build came around, he competed in a more conventional drift car platform in the shape of a heavily modified and homebuilt Mk4 Supra, complete with a 2JZ making a solid 640bhp, of course. When we say home-built, that's not quite a fair or accurate assessment, as Marcin, rather unsurprisingly, runs and owns MAC Motorsport. Based in Scotland he specialises in the Toyota's famed 2JZ powerplant, so it's fair to say he knows his way around them rather well.

So the obvious question is why the change of car? And, perhaps more importantly, why choose an innocent Honda S2000 as a replacement, a car that has never exactly held a fierce reputation as the perfect drift machine? We should have expected Marcin's can-do answer. "Because it hadn't really been



Apart from the Amuse GT1 wide-arch kit, there's not much that gives away this car's 700+bhp little secret once the bonnet is closed. Until Marcin fires it up, that is...



done before!" he explains to us with a chuckle. "There have been plenty of 2JZ-powered S2000 drag cars built, but not drift cars. The weight distribution is really good, too."

With his mind made up, a suitable S2000 was soon sourced and, knowing what was to come, 'suitable' in this instance meant a good rolling shell that had already been relieved of the parts Marcin didn't want or need. Which turned out to be just about everything. Work began straight away and, as Marcin has already pointed out, installing the in-line six-pot turned out to be relatively painless exercise. The first job was to mount the engine in place and, for this, bespoke mounts were fabricated to simply mate it to the original crossmember that usually supports the much lighter Honda K20. Due to the 2JZ's rear bowl sump setup, the engine actually

slipped in behind the untouched S2000 crossmember with no fuss or further modifications. There's even still an inch or so of clearance from the back of the engine to the original bulkhead, which is handy as the BDC rules don't allow bulkhead modifications! It squeezes in fine between the inner wings, too.

The engine actually started life as a naturally aspirated 2JZ, complete with VVTI, when it used to call a Lexus GS300 its home. The lack of forced induction didn't affect Marcin's plans, as he had a power figure in mind that would require a full and complete rebuild. The plan was 850bhp and 1000Nm of torque, or nigh-on 740lb ft in UK talk. So, to be sure it would be able to hack it the engine was built to be capable of producing over a 1000bhp, just

to be on the safe side. The pistons and rods were upgraded, the head machined and fitted with oversize valves and uprated valve gear and the whole lot put together by Marcin himself. Unsurprisingly, it was also Marcin who designed and fabricated the custom inlet manifold and plenum, engineered to distribute even flow and a matching new exhaust manifold was also constructed for the build. Bolted to it is a Precision 6266 turbo and there's a huge 60mm wastegate that vents straight up through the bonnet. The exhaust system to expel the rest of the engine's waste gases is also custom-made from a meaty 3.5" pipe that travels all the way down the car before splitting into dual 3" pipes that exit inside of the rear bumper. With an ECU and fuel system capable of supporting it, the car also runs on E85 and so far has produced

2JZ S2000



Above: Boosted six-pot engine sits perfectly in the Honda bay, thanks to Marcin's impeccable custom handiwork



"There have been plenty of 2JZ-powered S2000 drag cars built, but not drift cars"



730bhp on the dyno, but there's more to come as finer tweaks are made.

Once the motor was in place it was onto the transmission but there was never any intention to fit the matching Toyota 'box here. Instead, sitting behind the Toyota motor is a motorsport derived six-speed dog engagement 'box from Lithuanian transmission specialist Samsonas Motorsport. It's fitted in place using a custom-made mount, propshaft and bellhousing and engages drive through a matching bespoke clutch and flywheel arrangement, all executed by Marcin.

There was no way the original S2000 differential would be able to transmit all that power down to the rear wheels, so sticking to what he knows, Marcin chose to fit a Mk4 Supra differential. It's housed inside the original Honda S2000 carrier that's been modified to fit and it's matched to the beefier Supra driveshafts and rear hubs, which is why the rear track is notably wider. As with the rest of the build, it sounds like the kind of tricky engineering task that would have taken a while to perfect, but Marcin tells us the diff conversion was completed in single day!

To accommodate the extra width at the rear, there's the perfectly suited function-over-form derived Amuse GT1 wide-arch body kit, although with the huge wheels at the rear, further modifications have been made to increase clearance. Inside, there's little more than the roll-cage, a couple of seats and the rather trick tablet in place of the gauges. It's linked directly to the ECU to give a direct feed of what's going on, so



Above: There's so much grip on tap now that Marcin has to resort to budget tyres for skids



TWIN CALIPERS

You will have noticed that Marcin's car uses two-calipers on each of the rear wheels. One set is used as part of the standard conventional braking system but the second set is employed just for the handbrake alone. It allows the whole system, from the master cylinder to the calipers, to run separately. This is done for optimum braking performance and so that the foot brake can be used independently, or in unison, with the handbrake – which comes in handy when drifting. The calipers themselves are actually from an AMG Mercedes of some kind that Marcin was able to get his hands on and they are fitted using custom brackets that he knocked up.

2JZ S2000



Power: Proven 730bhp at 1.2bar

Engine & Transmission: 2JZ VVTI, forged pistons, steel rods, Precision 6266 turbo, 60mm Turbosmart wastegate, custom exhaust manifold, plenum and inlet, 1600cc injectors, E85 mix, Samsonas Motorsport six-speed dog 'box, custom bellhousing, flywheel and clutch

Chassis: TEIN coilovers, Supra front and rear hubs, polybushed throughout, Supra differential and driveshafts

Brakes: StopTech six-pot calipers, twin rear calipers from a Mercedes AMG, hydraulic handbrake, original S2000 pedalbox

Exterior: Full Amuse GT1 body kit with further bespoke arch extensions, custom rear wing with billet legs, hardtop, polycarbonate windows with sliders

Interior: Full roll-cage, Cobra Monaco Pro bucket seats, TRS harnesses, tablet linked to ECU

Contacts/thanks: To my sponsors who helped me build the car: Clark Motorsport, Samsonas, Extreme Clutch, Diamond Wheels, HQ Garage, RA Motorsport, Driftworks, Rota Wheels, Turbosmart, Original Fabrication, Kinematic GP, N/A Nonsense, Rats Motorsport for the photography, and to all the team at MAC Motorsport for helping me and working so hard on the car



there's no need for any extra gauges.

The car was put together in just six short months but early test-drives were not without their trouble and it soon became apparent that fitting the heavy six-pot had played havoc with the S2000's geometry and general handling dynamics. Of course, some fine-tuning was to be expected and there was TEIN suspension fitted in place along with a polybush set to help keep things in check. But Marcin reports the car was virtually undriveable at first, wanting to go in just about every direction except the one he wanted! A trip back to the workshop soon had the car stripped back down and the decision was made to incorporate Supra front hubs, as you

do. With double-wishbones on both models, this required what Marcin describes as a 'simple' redesign of the top ball-joint, before everything could be bolted back up.

Suffice to say, the changes have made the world of difference and the car is now happy to go sideways, although it does take some commitment. "It's totally different to drive. The Supra was much heavier, around 400kg more, and it was quite smooth. But you always had to hold it on the throttle to go sideways. If you let up for even a second it would start to go straight again. The S2000 is totally different. It's angry to drive and very grippy. I'm entering corners at 105mph now to get it to go sideways and we're using

budget tyres rather than the expensive ones!"

It's still early days but so far, the car has proven itself reliable, having recently competed in a drifting event over in Ireland without fault and Marcin tells us he only needed to stop for fuel and tyres! The plan now is to develop the package further still and he's set on reaching his 850bhp goal but admits that the main thing he needs right now is more time behind the wheel to learn the car.

Marcin's dream is to take the car over to Gatebil, in Norway, which seems like a good idea to us, as the Norwegians would certainly appreciate a car as crazy as this. We somehow get the impression that Marcin is the kind of guy to make that happen, too... *



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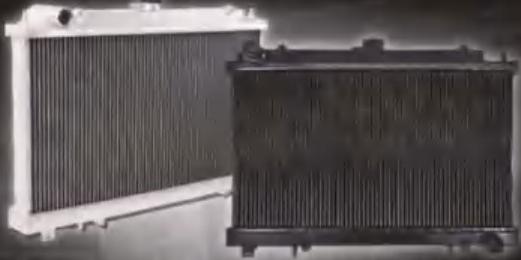
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SHOW REPORT: JAPSHOW FINALE

WHERE? Santa Pod, Northamptonshire

WHEN? 11/10/2015

CONTACT: www.japshowfinale.co.uk

GOING OUT IN STYLE

Japshow Finale began the winding-down of 2015's show calendar back in October. And as far as end-of-season shows go, it set the bar pretty high...

Words and photos: Sam Preston



Above: We enjoyed bumping into Jordan Lamb and his lovely K20-swapped EK build



Does Nathan's bagged Impreza look familiar? That's probably because it was featured in the August '15 issue...



Below: FD RX-7s don't get much better looking than this...



Left: Severn Valley Motorsport's 'Qashqai R' is still setting records left, right and centre...



...as is the firm's super-power 'Gundam' GT-R



We can't believe that we're already at the tail end of the 2015 show season. But there's no point trying to deny it any longer – winter is well and truly on its way. Thankfully, shows like Japshow Finale offer a final glimmer of fun before everyone tucks away their cars ready for hibernation.

There was nothing wintery about the weather at this year's October show, though, with the sun beaming down, many attendees were even brave enough to wander around

the vast grounds in shorts and T-shirts!

If you've never been to one of Santa Pod's Japanese-specific car shows before, let us give you a lowdown as to why they're so fun... On top of some of the biggest club stand sections of any show in the country, punters are also treated to action up the strip in the form of several different championships. Oh, and of course there's the Live Action Arena where you're likely to spot some pro-drifting, along with a dedicated 'Podkhana' gymkhana section, just in case you still weren't sold.

Out of the countless cars in the static show

'n' shine section, this time we were particularly drawn to a gorgeous DR30-shaped Nissan Skyline, along with a beautifully aggressive FD RX-7 sitting on a set of gold Work VS-XX splits.

There was also a monstrous amount of cars queuing up to take part on the quarter-mile strip for events such as Run What Ya Brung, the FWD Drag Series and Jap Drag Series. If cars like Gary Gooding's Supra and David Greenhalgh's R34 Skyline don't get your pulses racing, we're not sure what will! Check out the website for the full list of results. Santa Pod, we'll see you in 2016... *



One of the first new-shape Civic Type Rs on the road understandably took the punters by storm



The Rapid GB dyno sorted the men from the boys, with people testing the power figures of their cars throughout the day

SHOW REPORT: JAPSHOW FINALE ➤



Right: Run What ya Brung drag racing never fails to attract all manner of monster Jap cars





Below: Terry Taylor's supercharged BMW M3-powered 240Z nailed some exceptional quarter-mile times. For more, check out the November '14 issue...



Below: Chris Sutton's EG Civic illustrates why we love the FWD Drag Series so much... just check out that turbo!



Above: Extremely clean and sinister S14A caught our attention out on the club stands. We'd love to know what's under the bonnet...



Above: It doesn't get much rarer than this awesome retro Celica convertible

SHOW REPORT: JAPSHOW FINALE



The 'want' level on Deyal's R34 GT-R is very, very high!



Lots of retro JDM goodness was found around the show. But which classic would you take?



Want to know more about Will Sanctuary's 350Z (below)? Head over to p119 to read all about it



Below: Mint Nissan S13 and PS13 duo acted as a Nissan history lesson





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FC3S RX-7 DRIFTER

STYLE IS EVERYTHING

Stuart Lawson's outrageous RX-7 is out to remind us that drifting isn't just about scoring points – it's also about looking as cool as possible in the process...

Words: Sam Preston

Photos: Adrian Brannan

www.hards



FC3S RX-7 DRIFTER



Style seems a like a bit of an afterthought with drifting nowadays..." our man Stuart here wastes no time laying down his views, after dramatically arriving for this photoshoot with his eye-catching RX-7 in a suitably sideways style.

Just a quick glance at his pride and joy should be enough to tell you all you need to know about which era of drifting is Stuart's favourite. That sump-jeopardising ride height, the antagonising yellow paint job and those bling Work Equip wheels are all nods to the arguably much more image-focused days of drifting from around a decade ago. If we need to get one thing straight from the start then, it's that Stuart's car is about far more than performing well when the back end is hanging out...

With its angular body enhancers and lairy styling, this car perfectly epitomises what was arguably the heyday of drifting in Japan. Back

in 2005, D1 Street Legal (D1SL) successfully began as a spin-off to the D1GP championship. With tighter mechanical regulations to keep costs down, drivers often put more attention into getting their cars looking absolutely bonkers in order to further stand out from the competition when on track, and accumulate more points. The door wedge shape and screaming rotary engine of the FC RX-7 meant it was a sure-fire winner as a starting point for a drifting project car at the time (see Stav's entry in our *Our Cars* section on p110 for another fantastic example).

For Stuart, the love affair with drifting began in an all-too familiar way. "I lost my childhood to *Gran Turismo*," he explains, "and after watching a D1 Great Britain event at Knockhill, I knew that one day it would be me out on the circuit." Staying true to his word, it wasn't long after passing his driving test that he converted from the inevitable hot hatches of the time to something powered from the rear. "My Silvia was built up to a good spec,

"Drift cars are meant to be an extension of yourself... I run with the motto that style is everything!"



Below: A JDM drift classic, the battle-scarred Work Equip wheels were a must-have for Stuart's build



Left: Attain tail-lights are super-rare and set off the rear end nicely



FC3S RX-7 DRIFTER



Funky interior includes novelty steering wheel and zebra doorcards!



but after clipping the tyres at Crail Raceway, the exhaust went through the fuel tank and the car caught fire in a bad way!" he laughs. A self-confessed thrill-seeker, this was merely confirmation that he'd certainly found the right motorsport for him.

"An RX-7 was always going to be on the cards after I did a mechanic's apprenticeship for Mazda and had a mind-blowing passenger ride in one with the foreman," Stuart continues. This explains why for the past six years there's always been an example of one of these cars on his driveway. It was in 2011 that he eventually bit the bullet and imported the car you see here over from Japan. Originally a silver FC3S Turbo II, it had clearly seen some action, with the addition of parts such as a Cusco through-dash Safety 21 roll-cage and a full body kit. Modified for competition, the car proved to have some unexpected mechanical niggles which set Stuart back from entering it onto the competitive UK drifting scene.

With mechanic Stuart prepping the car at home and beginning with some casual competitions, such as those held at his local Driftland venue, Stuart went on to claim his

BDC Pro licence in 2013, although he's yet to put it to good use thanks to the birth of his daughter the very same year. "2016 is the year I will come back all guns blazing, though," he is quick to explain. The boosted 13B remains lightly modified at present, but will receive an overhaul over the winter months to ensure the car stands as good a chance as possible against its more modern rivals "Nowadays, horsepower figures have gone crazy and the money people are spending has got serious..." Stuart says, quietly confident that a well-sorted chassis and some killer style can go a long way against a big-power build.

But, of course, the crucial part of the car for our protagonist here will always be how much coolness is oozing out of its pores. Drifting as a sport has always been more about style than its other circuit-based counterparts, which was Stuart's inspiration to respray the car in that wild yellow hue, paying homage to cars such as D1 legend Mitsuri Haruguchi's legendary RX-7 (Google it to see the similarities for yourself). Then there's that deliciously retro louvred rear windscreen cover, not to mention those



ROTARY ROCKET

Stuart's Turbo II-spec car came with a boosted 13B rotary engine as standard but his is now pushing out around 280bhp (and that incredible noise, of course) thanks to some subtle modifications.

A GReddy front-mount intercooler, FEED inlet manifold and GReddy boost controller are now controlled by an APEXi ECU. Keeping the formula simple means that reliability remains – vital for a car regularly driving to and entering competitive events.

Stuart has plans to add more power over the winter, however. Watch this space to see how he gets on...

"2016 is the year I will come back all guns blazing"



FC3S RX-7 DRIFTER



You definitely wouldn't miss this car in your mirrors during a tandem drift battle...

Power: Approx. 280bhp

Engine: Turbocharged 13B Mazda Wankel rotary engine, APEXi front-mount intercooler, FEED inlet manifold, HKS cold air induction kit, FEED pulley kit, Cusco oil catch can, Koyo radiator, URAS exhaust system, GReddy boost controller, APEXi Power FC ECU

Transmission: Standard five-speed gearbox with ORC twin-plate clutch, two-way rear differential with RE Amemiya 4.11 ratio crown wheel and pinion

Chassis: Polished 9x17" (front) and 10x18" (rear) Work Equip E05 split-rims, HKS Hipermax D coilovers, Cusco front and rear strut braces, Super Now! rod ends and camber links, Uras steering rods, custom modified knuckles, DTSS rear steer eliminator bushes, solid rear differential bushes

Brakes: FEED front and rear big brake kit, Driftworks hydraulic handbrake conversion

Exterior: BN Sports front and rear bumpers, side skirts and front wings, RE Amemiya rear spoiler, mirrors and bonnet vents, Foresight roof spoiler, modified Attain tail-lights, Mazda wind deflectors, louvered rear windscreen cover, Lamborghini-style door hinges

Interior: Sparco EVO GRP Tech racing bucket seat (driver's), Sparco Sprint seat (passenger's) with Bride seat rails and KSport six-point harnesses, AMK Garage fully custom-built rollcage with NASCAR-style door bars, Hitman steering wheel with snap-off boss, Chizfab handbrake lever, door-mounted GReddy boost gauge, zebra-print doorcards

Thanks: My wife for putting up with it all, all the Aberdeen Hardstyle guys, Ian Duncan for all his rotary help, Marcin Auto Centre in Dundee for always offering to help in any way they can, and I really should mention the countless hours my good friend and fellow drifter Steven Black has put in to try keep the car looking good over the years



Lambo-style doors. "Drift cars are meant to be an extension of yourself. My car has never been about all-out performance. In fact, my friends and I run with the motto that style is everything!" he asserts. And it's hard to argue that the car's ballsy appearance is nothing short of awesome.

Inside, things remain equally as light-hearted. In fact, it's not dissimilar to stepping into an Eighties cocktail bar with those zebra print doorcards and that crazy steering wheel/gear knob combo. That's not to say, however, that it doesn't remain a functional place to be. The incorporation of some fully harnessed-up Sparco buckets and a Driftworks hydraulic handbrake conversion ensure that Stuart is more than legal for any

event you can throw at him. Speaking of regulations, the aforementioned Cusco rollcage has now been replaced by a fully custom affair from the guys at AMK Garage, finished in an electric blue, of course...

As we take a step back to appreciate what a mental road-going car we have in front of us, we ask Stuart why he's stuck with the old-school RX-7 instead of opting for one of today's more popular choices such as an S-chassis Nissan? "The noise, the looks, the grip... it's personal preference. I know other cars are far easier to modify, but I love this particular car and its quirks and I wouldn't have it any other way." Needless to say, we can't wait to see this little rascal tearing it up in an upcoming round of the BDC... *



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BRAKES

This month *Tech Talk* takes a closer look at performance disc brakes, the way they work, and how and why different upgrades can improve your car's braking abilities...

Words: Jamie King
Photos: Michael Whitestone

Bigger brakes have got to be better, right? Well, in short, yes, but why? How do they offer improved performance? What advantages do they have over standard brakes? And what makes for a 'performance' brake setup compared to a standard road-going system? Well, that's what we're going to take a closer look at here.

But before we delve into the hows and whys, let's just take a minute to recap how a disc brake system works. The easiest way to understand a disc and caliper brake system is to think of it as a plate and a clamp – the disc is the plate, and the caliper is the clamp. When you put your foot on the brake pedal, the clamp squeezes onto the plate and the friction created causes the car to slow down. Simple.

But there are many variables – such as the materials used, the positioning of the caliper, the size of the disc, and so on – that all have an effect on how a particular brake setup will perform, and it's those variables we'll take a closer look at now...

DISC DIAMETER

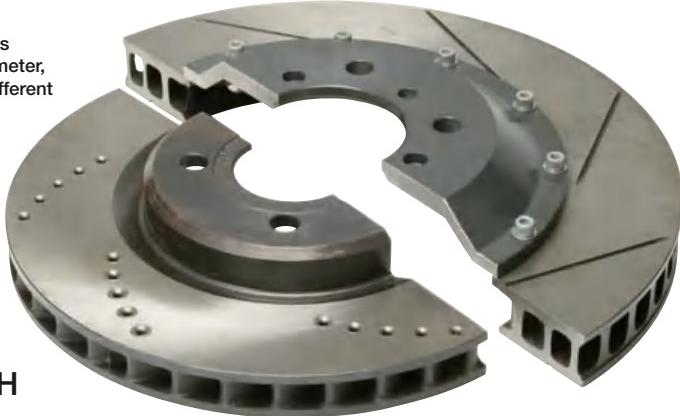
The primary job of the brake disc is to provide a suitable area for the caliper to clamp onto, therefore alterations to the disc's size and material will have a huge impact on the braking performance. Disc diameter is perhaps the most notable difference between performance brake kits and standard factory equipment. And it's also one of the easiest principals to understand too. Basically it's all to do with the principal of leverage – or more accurately, brake torque.

If you imagine a 10p piece spinning at 1000rpm it will take a lot of clamping force to stop it because the distance between the centre to the outer edge (and therefore the leverage effect) isn't that great. Now imagine a dustbin lid also spinning at 1000rpm. The distance between the centre and the outer edge is much greater, so too is the leverage effect, and therefore it will take a lot less clamping force to stop it from spinning.

This leverage effect is known as brake torque. As a simple equation, torque = force x distance. Therefore if you place a caliper 100mm away from the centre of the disc, it would require twice as much effort to stop the disc spinning as if the same caliper was placed 200mm away from the centre of the disc. So, you can see why performance brake upgrades tend to use much larger discs than the standard factory-fitted items.



Width is just as critical as diameter, but for very different reasons

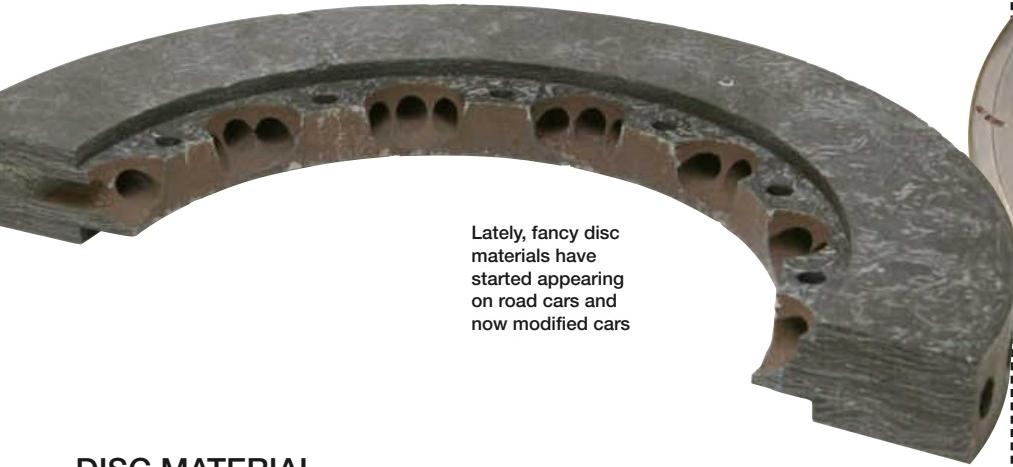


DISC WIDTH

The width of the disc also plays a part in terms of brake performance – not in terms of the amount friction produced but instead by keeping the brakes cool. Most performance discs will be a vented design, which are basically two friction surfaces separated by a series of vents. These vents help dissipate the heat build up caused by the friction of the brakes pads clamping against the brake discs when the brakes are applied. They run from the centre of the disc to the outer edge, acting like an in-built fan pumping cooling air through the disc as it spins.

The wider this gap, the more air there is

available to dissipate any heat build up. And keeping brakes cool and within their optimum working temperature range is crucial, especially on performance cars. Under normal road driving conditions this is rarely a problem but under track and race conditions where you are using the brakes much harder and much more frequently excess build-up can be a real issue. When the brakes get too hot you can experience brake fade or in severe cases if the brake fluid actually boils you can lose the brakes all together! You can see why keeping the temperature under control is crucial.



Lately, fancy disc materials have started appearing on road cars and now modified cars

DISC MATERIAL

The material the discs are made from has a huge effect on the braking performance. Most aftermarket and performance brake kits use a high-grade iron alloy composite disc. The exact make-up of the composites depends on the manufacturer, and most are closely guarded secrets but iron alloy is frequently used because it has the ability to resist distortion and cracking (even after repeated heat cycles), because it is fairly cheap, and it's easy to work with. Different composites have slightly different frictional properties but most are all fairly similar. The difference in frictional properties becomes most noticeable when you start looking at completely different materials, such as carbon-ceramic or full carbon discs.

Carbon-ceramic discs are, as the name suggests, a combination of ceramics and carbon. The ceramic part gives the disc its strength and rigidity, whilst the carbon gives its frictional properties. The advantages of carbon-ceramic discs include being lightweight (it's notably lighter than an equivalent size iron alloy disc), longevity (as

carbon-ceramic discs wear more slowly than equivalent iron alloy items), and it has the ability to work from cold. All of this makes it perfect for fast road use.

However, carbon-ceramic discs aren't the pinnacle of braking performance – full carbon brakes are. Carbon-ceramic discs may be significantly lighter than iron alloy items but they are still quite weighty compared to full carbon discs as used in F1 and other top-end motorsport applications. Full carbon brakes (known as carbon/carbon because both the disc and pad are 100% carbon) offer even greater resistance to brake fade, are even lighter, and have even higher frictional properties. However, they are ludicrously expensive, don't work unless they are already up to temperature, and require specialist wear monitors. This is because as both the disc and pad are carbon there is very little loss in performance with wear and the brakes will work perfectly right up to the point that either the pad or disc has completely worn through, at which point you have no brakes at all!



DISC CONSTRUCTION

There are two main types of disc: one-piece and two piece. One-piece discs are, as the name suggests, made from a single piece of material and are what you'd expect to find on the vast majority of standard road cars.

Two-piece discs, however, have separate bells and rotors. The bell, usually made from aluminium alloy, is the centre part which allows the disc to be bolted to the hub, and the rotor is the iron alloy or carbon-ceramic 'ring' that the caliper clamps on to. There are two methods of fixing the bells to the rotors: fixed, or floating. Fixed bells and rotors are when the two parts are simply bolted directly together. Because the two parts are made from different materials, and therefore expand and contract with heat at different rates, there is some room for expansion but not a great deal.

That's where floating bells and rotors come in. Rather than being directly bolted to one another, floating discs utilise a series of bobbins that allow slight movement between the bell and rotor. This is particularly advantageous in motorsport applications where the brakes reach incredible temperatures; allowing the rotor to expand independently of the bell reduces the likelihood of warping and distorting the disc. It also means that the rotor is kept perfectly in line with the caliper and pads, ensuring the maximum surface area and therefore maximum braking efficiency at all times.



This solid, one-piece disc shows how the internal venting webs work



DISC FACE

There are several different styles of disc face available. Some are plain, some are grooved, some are cross-drilled, and some are both grooved and cross-drilled. These different face designs all have their unique advantages and disadvantages, and choosing the right one will depend on the application it will be used for.

Plain discs, for example, are commonly used on road cars because of the low noise levels they produce and because they are cheaper and easier to mass produce. However, they can suffer from excess heat build-up if used hard, so fast road and track cars often swap to a cross-drilled disc design. The little holes machined into the rotor allow hot gases trapped between the pad and disc face to escape, therefore keeping everything cooler. The holes also help clean the pad of brake dust, ensuring a clean surface between pad and disc.

The downside to cross-drilled discs is that by its very nature, machining a hole into the disc weakens it, and if the disc is going to

crack you can bet it starts from one of these holes. They're also quite outdated nowadays – cross-drilled discs were first introduced to be used with asbestos-based brake pads.

As modern brake pads don't contain any asbestos they tend to work better with grooved discs. These offer better initial 'bite' than plain or drilled discs, as the leading edge of the groove helps clean the brake pad of any debris, allowing a cleaner initial contact between the pad and the disc. There are different styles of groove including straight grooves from the centre to the outside edge, curved grooves which are radius from the centre of the discs to the outer edge, and a 'J hook' design, which looks like little hooks across the disc face. The different styles of groove have different characteristics: some increase initial bite, some have better release qualities, and some affect the overall friction between the disc and the pad. Therefore the best solution is not necessarily the same for each application.





Every caliper features at least one piston to provide the clamping force



TYPES OF CALIPER

The caliper is the clamp that forces the brake pad onto the disc – the friction this causes then slows the car down. There are two types of caliper available: either a one-piece item, or a two-piece split-caliper.

One-piece calipers are usually reserved for use in top-flight motorsport series where weight is crucial, and typically, these will be made from lightweight materials, such as billet alloys. One-piece calipers are not as resistant to caliper flex as the cheaper, easier-to-produce split calipers but as they are reserved mainly for lightweight race cars the brake line pressures used are significantly less, and therefore flex is less of an issue as it would be on a heavy road car.

Most performance, and indeed nearly all standard production, brake calipers will be a two-piece design. Many production cars will come fitted with a floating (also known as sliding) type caliper. This system sees the piston(s) on one side of the caliper, which is attached to a sliding mechanism bolted to the hub. Because the caliper isn't directly fixed to the hub its position in relation to the disc can alter, and this is exactly what happens; when the pedal is pressed the piston pushes one pad onto the disc, which causes the caliper to slide across and then pull the other pad onto the opposing side of the disc face. This type of caliper is fine for most standard road cars, but for performance cars a fixed caliper is preferred.

A fixed caliper is easier to picture – the caliper is bolted directly to the hub and has pistons on either side of the disc face. As you press the brake pedal brake fluid is forced into both sides of the caliper (via the bridge pipe which joins the two halves of the caliper), which forces the pistons out of the caliper body. This, in turn, presses the brake pads against the face of the disc. The number of (and size of) these pistons will affect the braking characteristics.

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PD08K Kit	Yellowstuff highest friction pads and USR slotted black Geomet® discs
PD012K Kit	Redstuff premium fast street pads and GD sport drilled black Geomet® discs
PD013K Kit	Yellowstuff highest friction pads and GD sport drilled black Geomet® discs
PD016K Kit	Greenstuff sport pads and BSD blade style slotted black Geomet® discs
PD017K Kit	Redstuff premium fast street pads and BSD blade style slotted black Geomet® discs
PD018K Kit	Yellowstuff highest friction pads and BSD blade style slotted black Geomet® discs
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Above: Pistons can vary in size, even within the same caliper

PISTONS

The pistons are the biting force behind the brakes, and are what causes the brake pads to clamp onto the disc. The number of pistons (often referred to as 'pots') in a caliper will affect the braking performance, and the exact design of the piston arrangement can get be complicated, and is often bespoke to a specific application. You see, it's not a simple case of 'more is better' as things such as piston size, piston pressure, and pad wear all need careful consideration.

A larger piston will exert a larger pressure at the pad but can cause the pad to wear unevenly, whereas a small piston will have less pressure acting on the pad.

It's a balancing act of getting the right number of pistons to control the pad wear as best as possible, and getting the correct size of piston to create the required pressure acting on the pad.

Most four-pot calipers will have pistons of equal size, but many six- and eight-pot calipers tend to have different sized pistons – known as differential bore calipers. In these, the disc will pass a smaller piston first, then a medium size piston(s), and then finally the largest piston. This is to control the pad wear and stop the pad being forced into the caliper body. The size of the pistons depends largely on the weight of the car. As a general rule of thumb a lighter car will use smaller pistons and a heavier car will use bigger pistons.



Below: This lug mounted caliper shows how it bolts straight to the hub



MOUNTING

There are two ways in which to mount a caliper to a hub: either lug mounting or radial mounting. Lug mounted calipers are mounted axially onto the hub, which means there is no need for a bracket between the caliper and the hub. However this type of mounting is more susceptible to flex in the caliper under pressure, and means the same caliper can only be used for one specific application.

Most performance brake kits are radial mounted – an alloy bracket is axially mounted to the hub, and the caliper is then radially mounted to this. Radial mounted calipers are more resistant to caliper flex than lug mounted calipers, and because they usually require a bracket mean that one caliper can be used for more than one application. To make the caliper fit a different car all you need is a different alloy bracket made to suit the hub.



BRAKE PADS

Brake pads have a huge impact on a car's braking performance – they are, after all, the component that physically causes the friction used to slow the car.

The exact blend of a brake pad compound is specific to the manufacturer and is a closely-guarded trade secret. Different compounds will have different characteristics. For example, some will wear quicker than others, some will work fine when cold, others only work when warm, and some are even designed to produce low amounts of brake dust to save you cleaning your wheels every five minutes. It really is a case of horses for courses.



BRAKE FLUID

While it may not seem as exciting as some of the other elements we've looked at the brake fluid is the lifeline of the entire braking system and shouldn't be overlooked. Again, the type of fluid you should use will depend on the application. For example, for road use the fluid needs to be resistant to water, not deteriorate over time, have lubricating qualities for any rubber seals, and also be relatively cheap. Also, for road use brake fluid needs to be DOT rated to meet the required standards.

On a race car, however, you won't care so much about any of that; instead you'll want a performance fluid that will be capable of handling the enormous temperatures involved – some brake fluids can deal with over 300°C before they boil!

As a general guide, a good quality DOT5.1 brake fluid will be ideal for fast road and occasional track use *





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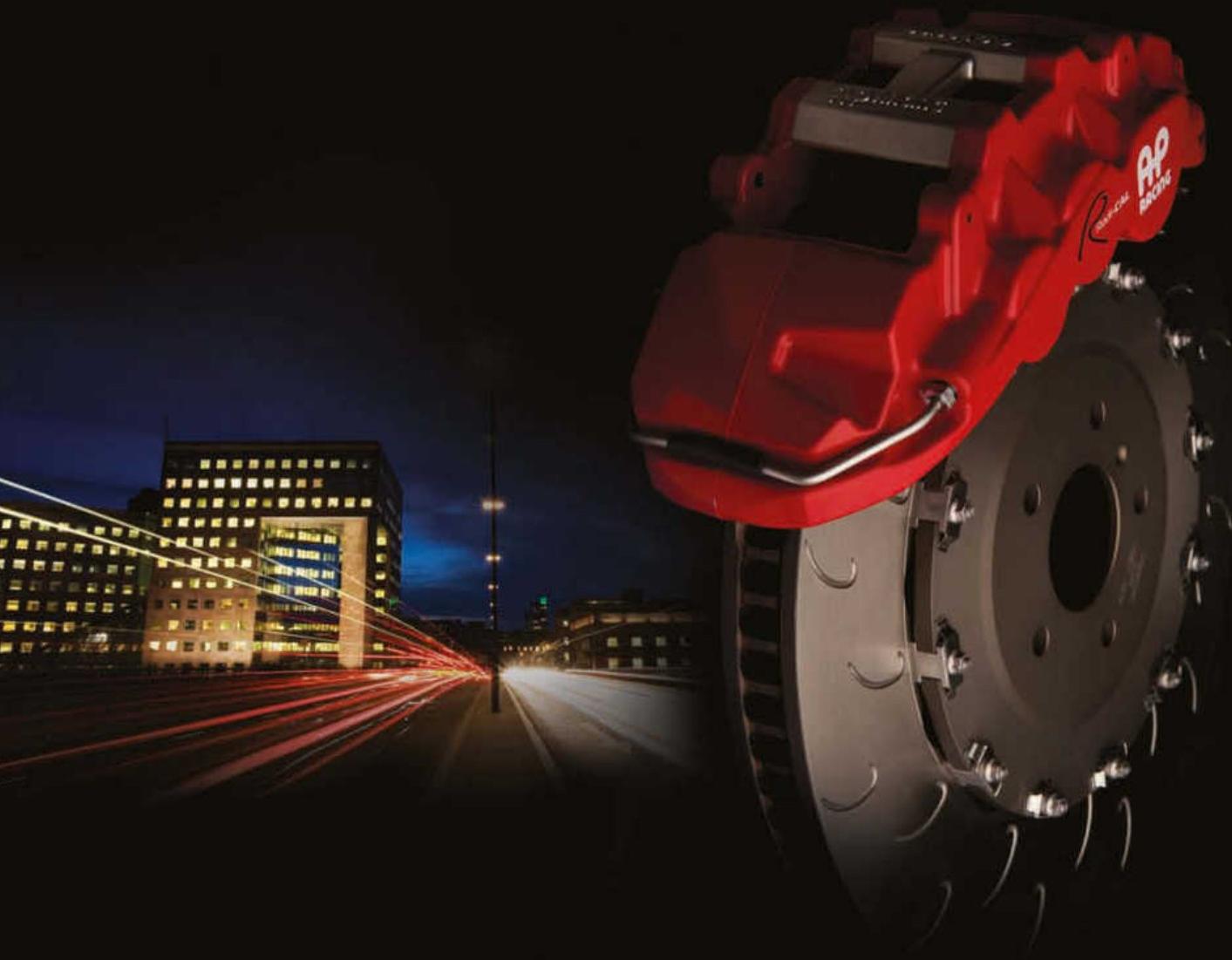
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MITSUBISHI EVO VIII FQ-300

If you're thinking of buying a super-saloon for the road then the FQ-300 may well be perfect; here are the key things you should know about it...

Words: Simon Holmes Photos: Mitsubishi

Tech Spec

Engine: 1997cc, four-cylinder turbo

Power: 301bhp at 6800rpm

Torque: 300lb ft at 7500rpm

0-60mph: 4.9sec

Top speed: 157mph



HISTORY

The eighth generation of Mitsubishi's Evo arrived in the UK in 2003 and, in somewhat typical Mitsubishi fashion, the changes on the face of it were minor to say the least. The front-end styling did take a noticeably softer, more modern approach but there was more to it than that, as the rounded look was developed to improve both drag and stability. And although changes from the previous Evo may have seemed minimal, underneath there were further significant improvements.

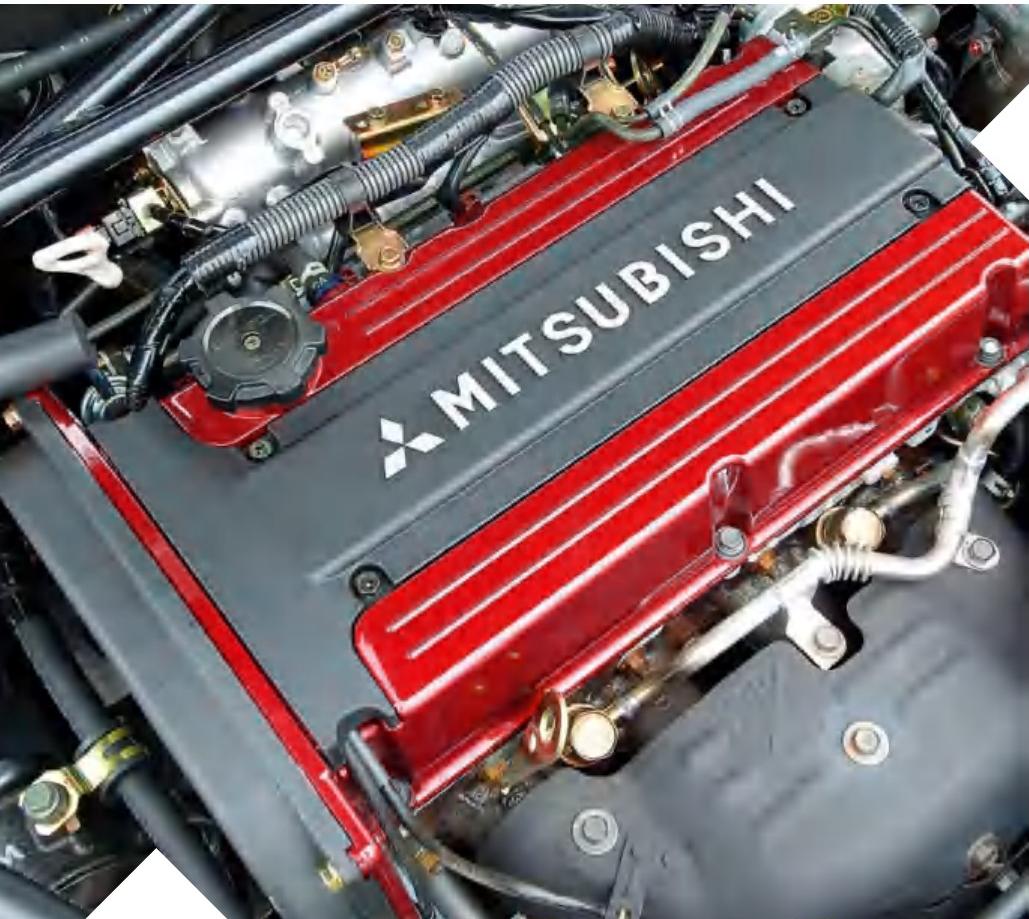
For a start, there was now over 300bhp on

offer. Although it used the same four-cylinder, turbocharged 4G3 engine as its previous incarnation, the extra power was thanks to a freer-flowing exhaust system – from HKS no less – along with a few other mild tweaks. 60mph from rest now arrived in a shade under 5.0 seconds and it was limited to a top speed of 157mph.

The engine was also connected to a six-speed gearbox and there was a new and improved version of the Evo VII's innovative Active Yaw Control (AYC). Brembo four-pot

calipers still supplied the ample braking power and it needed it, as at a touch over 1400kg, it wasn't exactly a featherweight.

Whilst the FQ-300 could now be purchased and serviced in the UK, all cars were technically imports, converted by Colt Cars in the UK and the spec adjusted to suit. That meant other models with more, and sometimes less power, soon followed suit, but the FQ-300 remained a popular middle-of-the-road choice. The ninth generation Evo replaced the model in 2005.



Chassis:

Odd knocking noises, especially from the front end when turning at slow speed, could be down to variety of things, but don't get the problem confused with the loose diff bolt issue that affected earlier Evos, as it does not apply to this model. Instead, it's likely to be worn anti-roll bars or bushes. Top mounts can also cause trouble. If the car is fitted with aftermarket suspension inspect it carefully, as many brands wear quickly on UK roads. At the rear, a knock or rattle can be down to worn bushes, starting with the tie rod or control arm bushes, so it's best to change them all at once.

Brakes-wise, sticking rear calipers are a known issue if left some time. Also check for signs of warped discs felt as a vibration through the steering wheel.

Exterior:

There's not much to worry about here other than crash damage and rust. The former may not hard to spot, so beware. Look for even and continuous panel gaps. Take a step back to look for mis-matched colours and check under the bonnet for any broken trim, plastics or clips. If you can, lift the boot carpet and inspect the seams for signs of repairs. Rust can affect the trim at the top of the doors and the slam panel or underneath if it wasn't undersealed when imported, so ensure it's been protected. Finally, the front end is prone to stone chips, so don't be surprised if the paint or mesh protecting the intercooler is marked.



WHAT TO LOOK OUT FOR

Engine and transmission:

The trusty 4G63 is a strong unit, especially in these later guises, but look out for signs of blue smoke as an indication the engine is burning oil. A small amount of white smoke on idle is normal on a cold day. Oil changes should be done every 4500 miles or so and cambelts at 45,000. Noisy lifters when cold are commonplace and as long as they quieten down when warm, and don't get noticeably worse, it's not much to worry about. The heat shield across the top of the manifold tends to look a little worse for wear after time, so don't be surprised if it looks a bit grotty or has been changed altogether for an aftermarket item.

When it comes to the gearbox, changes should feel direct and if it feels a little notchy then get the fluid changed, it should be done every 15,000 miles with heavy use. The clutch also tends to take a bit of abuse due to the nature of the car, so make sure it's not slipping. However, the more common, and serious, problems concern the AYC. If the Tarmac, Gravel and Snow lights on the dashboard all illuminate together after ten minutes of driving then there's a problem. It's best to have the error codes read, as the issue can vary from corroded wiring connectors through water ingress to a failed AYC pump, which is expensive to replace.

Interior:

The VIII shared close similarities with the previous generation, which in-turn was a major step up from older models. For a start, it looked more modern, and was pretty well put together, although a little plastic heavy, so look out for signs of wear, tear or abuse. On the test-drive it's important to look out for any strange behaviour from electrical features such as the wipers, headlights or horn, and make sure no warning lights, such as the seatbelt light or ACD control, flash up on the dashboard whilst driving. Some cars have a problem with water ingress to the main wiring connector block located in the passenger side footwell and, when it starts to corrode, it causes havoc. It can be repaired but check carefully for damp.

Prices:

It's possible to buy your way into FQ-300 ownership for less than £8000 but for a better buy, we found a completely standard example with 53,000 miles on the clock for £8500. There aren't exactly plenty to pick from, though, so assess each example on its own merit. Modified cars can go either way in terms of value but cars that are clearly well looked after will always command more money, so don't let a well sorted car put you off. There are more modified cars for sale than standard anyway and around £10,000 onwards is where nicely tuned territory starts. From there, you can pay double that for a very clean, well-modified car.

OUR CARS THIS MONTH...

Banzai magazine

FK2 Civic Type R



Steve 'Stav' Neophytou – Contributor

FC3S Mazda RX-7



Simon Holmes – Editor

R32 Skyline GT-R



Sam Preston – Features Writer

EP3 Civic Type R



Pettit Racing – Guest Build

Mazda RX-8



Banzai magazine

F2K Civic Type R

So far: Arranged a six-month loan from Honda

This month: It's arrived!

Next month: On the dyno

Thanks: Honda UK



Well, this should certainly make for an interesting few months. As you can see, we've secured a new Honda Civic Type R for us to have a play with, kindly lent to us by Honda UK. It's actually the same one that we drove earlier this year for our group thrash feature at Bruntingthorpe (p28-34), so we know it's a good one.

For a start, it's loosened up with a few miles under its belt, 3800 to be exact, and it's black – which in our eyes is the best colour for these cars. It really does look like the Batmobile, and we love its form-over-function aesthetic. From the amount of attention it's getting when out on the road, it seems others would agree. If you haven't seen one in the flesh yet that might sound like an exaggeration but we've genuinely never known a car grab so many passing glances.

So, what are our plans for it? Obviously

we're not planning on fitting a roll-cage or sequential gearbox but expect a few bolt-on goodies to make their way onto it in the coming months, if all goes well. Most importantly, though, now we have Honda's hottest hatch at our disposal we plan on putting it to good use. Read that as using the car as much as possible for just about every kind of event, show and test that we can! Ultimately, we're going to report what the new super-hatch is like to live with and how it performs in a variety of situations. We already know it feels special from the way it produces power and puts it down due to the



A brand-spanking-new Civic Type R to make use of over the next six months should certainly make things interesting for us! Safe to say, we've got plenty planned for the car over the coming months

delightful chassis and awesome LSD. But just how good is it in the grand scheme of things for a car you can buy brand-new from a dealer? We're going to find out as best we can, with plans to run it at Santa Pod, time it at Bruntingthorpe (hopefully in the dry this time) and pop over to the Nürburgring in it, plus plenty more. With all that on the horizon, we're going to start off next month with a simple one: it's booked in with a local Dyno Dynamics rolling road to see how much power we actually have to play with here. We're expecting good things, so watch this space... *





Stav's RX-7 was updated from a 13B rotary to a 1UZ V8 on throttle bodies, but things have since changed again, as he will explain...

Steve 'Stav' Neophytou

Mazda RX-7

So far: Toyota 1UZ V8 conversion with Kelford cams and 8x throttle body conversion, six-point bolt-in cage, BN Sports wide-body kit, modified suspension and steering for drift use

This month: Hello new wheels. Goodbye rotary...

Next month: The same engine but with some big changes

I love rotary engines. They're one of my favourite engines and, truth be told, I'm not a big V8 lover. But despite these facts, this month's update, which follows on from last month's history lesson, explains that last year a Toyota 1UZ V8 was fitted to replace my blown rotary engine...

While my heart wanted rotary, my head wanted bulletproof reliability. And as this is a hard-used drift car the ultra-light, ultra-revvy combo of an all-alloy four-litre quad-cam Toyota 1UZ engine built by Zurawski Motorsport (www.zurawskimotorsport.com) fitted with long duration Kelford cams, uprated valve springs and topped off with individual throttle bodies breathing through alloy trumpets poking out the bonnet, seemed ideal.

Over 100bhp per litre, a rev limit that'd make a Honda S2000 feel jealous, and incredible throttle response sounded great to me, and even though Thomas Zurawski who did the conversion for me told me that I love turbos too much and I'd be bored in no time, I went with it as it sounded the sensible option.

Unfortunately, I didn't really like it. The wild cams may have made big power and revs but it also made a hugely un-V8-like powerband starting at around 5000rpm, it was too noisy for my liking, and the gearbox



I chose to use (the famously strong Toyota R154) felt like something from a vintage tractor – it just was not suited in feel or in gear ratios for my liking. Exactly what I did to solve this set of problems (which will bring us up-to-date with where the car is now) I'll cover next issue...

Away from the engine and transmission, a few more changes have taken place, and thankfully they're much more permanent ones. First up are the new alloys, which are a copy of my favourite wheel design ever: the deep-dish five-spokes Speedline made for legendary Porsche tuner RUF in the 1980s and 1990s. They are 10x17" front and rear, powdercoated yellow, and were

actually intended to be for a Ford Mustang, which just happens to have the same 5x114.3 PCD as the RX-7, so they fitted straight on.

As the car's intended use is now road and track as well as drifting, behind the wheels there are now 330mm disks with huge six-pot front and four-pot rear calipers sourced from the guys at CTC Performance (www.ctc-performance.co.uk) – enough to stop this sub-1000kg car almost instantly.

Finally, the original RX-7 clocks and huge array of Defi gauges the car arrived from Japan have been replaced with a race-spec Stack dash setup, allowing easy viewing off all vital stats *

Simon Holmes

R32 Skyline GT-R

So far: Ex-track car, coilovers, suspension mods, N1 spoiler kit, half-cage

This month: Sorted out some of the wiring mess!

Next month: I'll be checking the suspension out

Thanks: To the ex-owner for fitting so many Scotch Locks to find

I'm pleased to say I'm enjoying Skyline ownership so far. Every time I take the car out I'm impressed by it more and more. I love the fact that it feels retro but not dated and it still drives very well. However, the more I use it, the more I couldn't stand not having a working stereo any longer so I decided to have a quick look at what connections were in place to fit one.

I'm pretty confident when it comes to car wiring and know that imports tend to have slightly messy aftermarket wiring woes, so I wasn't too surprised when I removed the centre console trim. Behind it, was a jungle of loose wires, crimps, connectors and, worse of all, Scotch Locks. I hate Scotch Locks. I was taught never to use them and finding my Skyline was riddled with them was bad news because they are usually tricky little sods to remove. Still, it could have been worse, so one Sunday morning I set about sorting out the mess of wires, removing what wasn't needed and tidying up what was. That turned out to be slightly more involving, as a few hours later I had taken apart virtually every bit of trim, from the steering wheel cowling to the doorcards and removed various random spare wires, aerials, handsfree devices, turbo timers, leads and connectors! After pulling most of the interior trim apart and putting it back together in one piece, everything seems a lot better now I've de-cluttered it all, so I've finally ordered the leads I need to actually connect a stereo!

In other news, I'm now building a bit of trust in the car as, so far, it's proven reliable.



Below: This was just some of the wiring removed from behind the dashboard!

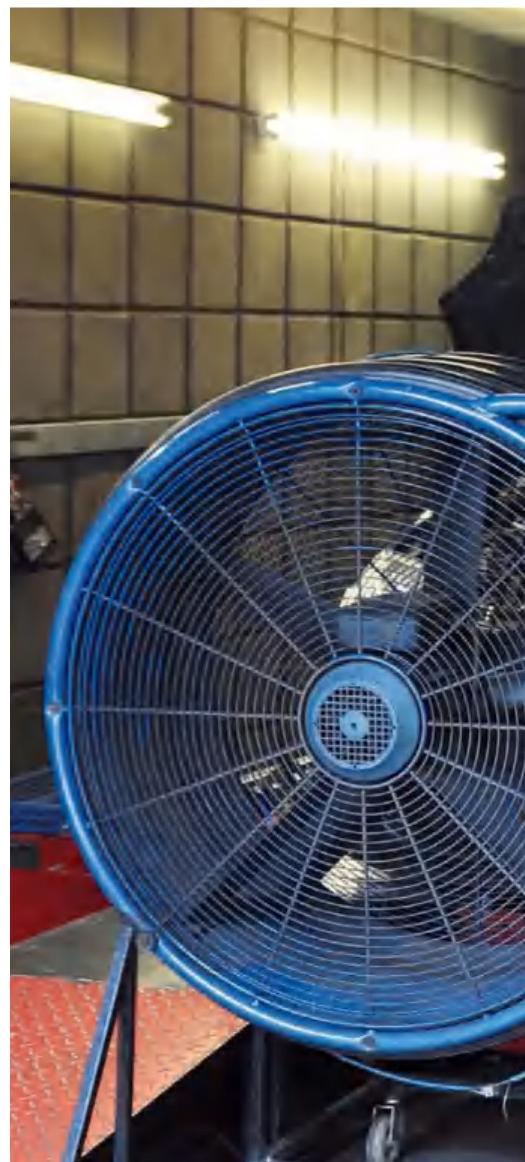
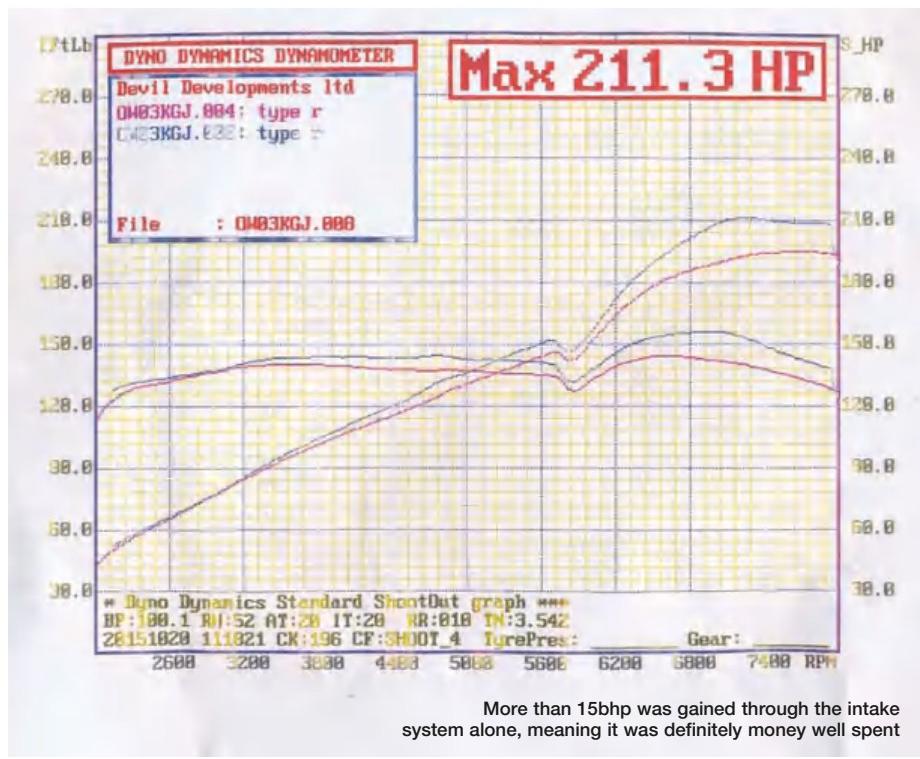


I still keep one eye glued to the oil pressure and water temperature gauges, mind you. It's a practice I can't seem to get out of after owning a few modified older cars. But now I've got confidence that the car isn't about to die at any moment and I've even taken it on the motorway for the first time. But it's not all rosy, as it soon became apparent that there's a rather worrying, and violent, shake through the steering wheel at 60mph or so. I

suspect it's more than a simple wheel balance, so I'll get it checked out next month. The car drives pretty nicely other than that, although the excessive front camber seems to make it tram line quite badly. Also, on faster B-roads I've noticed the suspension is so hard it's making the car skip, rather than progressively weight transfer through tighter corners. It's time to look into that I think *



Things weren't looking too pretty behind here, although it's all back to normal now



Sam Preston

EP3 Honda Civic Type R

So far: Coilovers, plenty of track time

This month: Air intake system and dyno testing

Next month: More chassis mods

Thanks: K&N (www.knfilters.com), Devil Developments (www.devil-developments.co.uk)



Something has been playing on my mind since buying my Civic: the fact that the hairdryer-esque induction noise on the standard engine sounds (and feels) horrendously restrictive when in VTEC. So in an attempt to unleash some more of the signature Honda howl we all love, along with potentially unlocking a few more horses in the process, I decided to buy a K&N Typhoon air intake system to replace the standard air box.

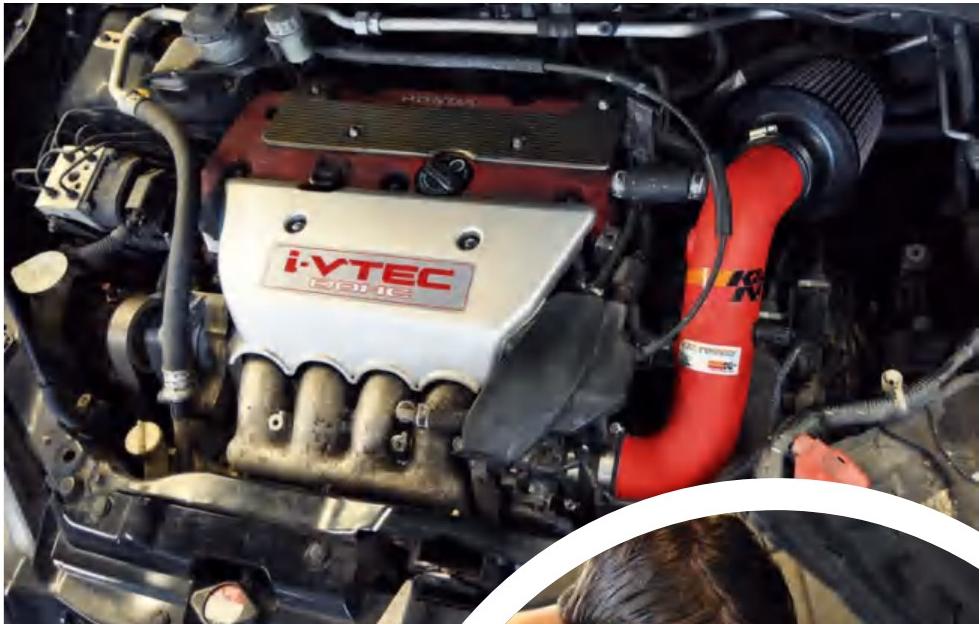
To pinpoint any gains in as scientific a way as possible, before fitting the tasty new pipework we headed down to the West Sussex-based Devil Developments to get dyno readings both before and after.

A highly-respected Ford tuner, Devil Development's front man Lee is known to have one of the most accurate dynos in the business. This worried me somewhat, as I'd heard stories of standard EP3s only returning around 160-170bhp in the past on these very conservative rollers. It came as a huge surprise, then, to get an initial reading of 196bhp – just one pony off Honda's claimed figure for my car over 12 years and 107,000 miles ago!

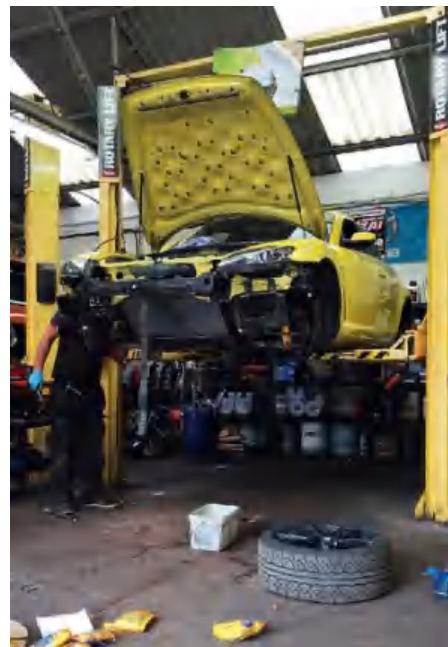
Then came the quick fitting of the new air intake. The sturdy parts in the box felt like they were built to last, and were also extremely easy to fit, which meant that my second (and much, much louder) power run was underway in no time. Although producing an undoubtedly much more provocative noise on full chat, I wasn't expecting massive power hikes. You can imagine my face, then, as the second figure came through: 211.3bhp – more than a 7% increase over the standard air box!

When K&N says it guarantees performance gains on its products, we now know that it really means it. Although my car possibly has a stronger engine than some other Civics out there, I cannot recommend this affordable modification enough, even if it's just for the grin that the induction roar will put on your face every time you reach the redline. Possibly the best bit about it is that the car remains as docile and quiet as ever at any part of the rev range before 5000rpm, meaning that motorway slogs are still as pleasant as ever. Until I decide to add a crazy exhaust system, that is... *

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Above: Simon makes light work of fitting the new K&N parts



Pettit Racing

Mazda RX-8

So far: Coilovers, big brakes, lightweight Sparco wheels, Kevlar seats

This month: New bodywork, new radiator and new MoT

Next month: Time for a track day!

Thanks: Pettit Racing (www.pettitracing.co.uk), LC Rotary (www.lcrotary.co.uk), SuperPro (www.superpro.eu.com), Eibach (www.eibach.com)

The Banzai/Pettit Racing RX-8 track mule has some serious circuit action on the cards over the next few months, so a bit of a freshen-up was in order to make sure it was still looking and running at its best.

Actually 'a bit of a freshen up' is perhaps an understatement, as the guys at LC Rotary

ended up giving the car a full-blown overhaul which included serious adjustments to both the suspension and bodywork.

First up, Lewis undertook the gruelling task of replacing all of the car's bushes with SuperPro items. Anyone who has done this job themselves will know what a nightmare it can be to scrape the ageing original bushes off the car but a bit of persistence and a whole lot of skill has meant it should now feel tighter than a drum.

To further straighten things out and complement the Pettit Racing coilovers already on the car, an Eibach rear anti-roll bar was also added while the car was up on the ramps. We feel that a bit of a thrash is in order now, simply to fully test the new chassis upgrades you understand...

But that's far from the end of the story. Next up, Reece oversaw a much-needed spruce up to the car's bodywork. This involved respraying the embarrassing clashing front right wing, along with the rear right wheel arch – both areas that desperately needed work – before giving the Lightning yellow paintwork a full

mopping to create a finish across the whole car that even new car salesmen would be impressed with.

Finally, the Pro Alloy radiator (which was built especially for us in the December '14 issue) was installed. This plug 'n' play unit features a 106% increase in core flow area, meaning that it's a must-have modification for a rotary track car. You can grab yours now through Pettit Racing themselves by heading to their website.

So a big thanks to the guys at LC Rotary this month who have illustrated their vast array of skills once again by improving almost every aspect of the RX-8. Now, let's go and test all of their hard work out on track *



Suspension bushes can be a pain to replace (left), while a Pro Alloy performance rad should keep things a lot cooler on track (above)



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HONDA S2000



HISTORY OF THE CAR

A seasoned racer, Terry first got behind the wheel of a competitive car at Goodwood in 1962. He is perhaps best known for racing in the Eighties and Nineties in cars such as a Bill Robinson-built Gartrac Ford Capri Mk3, along with a Ford Sierra with an air-cooled Porsche 962 engine in 1989.

Terry's latest project, this Toyota Supra, has been three years in the making. He aims to return to the Thunder Saloons race series next year in the car, which has been extensively modified to recreate the infamous TOM'S racer.

A drag racer in its previous life, the car was purchased with an already-modified 2JZ engine, along with a six-speed Getrag gearbox. A whole lot of tuning, mapping and dyno work later, carried out by over five companies ("some good, some not so good," according to Terry!), and the car now boasts 700bhp at the flywheel, with switchable boost control offering either 500bhp, 550bhp or 640bhp at the rear wheels.

Terry plans to bring the car back into competition in 2016 after some practice sessions this year.

BEST RESULT SO FAR?

The car is due to begin racing competitively next year.

HOW HAS TESTING GONE WITH THE CAR THIS YEAR?

We've had some early teething problems with the fuel plumbing and supply systems, but everything has now been addressed. I'm really looking forward to 2016 when the car should really start showing its pace.

DRIVER:
Terry Nicholls
CAR:
TOM'S-replica JZA80 Toyota Supra

RACE SERIES:
BARC Hammerite Classic Thunder Saloons and
CSCC Special Saloons & Modsports
[Terry intends to begin racing in both in 2016]





SPECIFICATION: TOYOTA SUPRA

PERFORMANCE 700bhp (approx)

ENGINE Ex-drag racer Toyota 2JZ-GTE straight-six engine, built with Carrillo rods and custom pistons and cams, single turbo conversion, 100-litre ATL fuel cell, twin Bendix low-pressure electric fuel pumps, four-litre swirl pot tank plumbed onto two high pressure Bosch fuel pumps

TRANSMISSION Getrag six-speed sequential gearbox

CHASSIS 18" Image two-piece split racing wheels with 270-profile (front) and 300-profile (rear) Michelin slick tyres, rose-joint front wishbone conversion with camber and caster adjustment, full Quantum race suspension setup, Brembo Ferrari F40 front brake discs and calipers with Pagid pads, standard Supra rear brakes with EBC YellowStuff pads

EXTERIOR Lightened Supra shell with custom front splitter and canards, rear alloy diffuser fins, Perspex windows

INTERIOR Custom weld-in multi-point roll-cage with single Sparco bucket seat



Pics: Jonathan Fletcher, Lindsey Fletcher and Liz Powell

DUNCAN CURTAIN HONDA INTEGRA TYPE R

We spotted Duncan in his DC2 at a recent visit to the Nürburgring, and couldn't resist having a little natter to him once we were back in the pits. We're glad we did, too, as his story is a pretty fascinating one!

He's owned his Nighthawk black UKDM DC2 for over a decade now, with the car being tucked away in the garage unless it's out on a track day, which Duncan likes to treat himself to a couple of times a year.

With track work in mind, Duncan's opted for Innovative engine mounts, TEIN coilovers and SuperFlex polybushes to keep things tight. This is complemented with a Safety Devices six-point 'cage to make sure this little coupé can out-handle almost anything in its way. For this year's 'Ring trip, Duncan's added a K-Sport big brake kit and upsized the wheels to 16" Team Dynamics.

And the result of these choice mods? Duncan's car is a pretty formidable weapon on any circuit now, even dicing with his friend Keith's V10-powered BMW M5! We'll see you on a track soon, Duncan...



MATT NEALE NISSAN 300ZX

Matt's twin-turbo 300ZX impressively serves as his daily driver. Combined with the fact that this mint example only has 60,000 miles on the clock from new, and you can see why he's kept things simple and sensible with this build.

Under the bonnet, modifications are kept to a minimum, and consist of Samco hoses, a pair of uprated blow-off valves, braided fuel lines and an APEXi air filter. This offers up an estimated 310bhp

for the Z32's rear wheels – more than enough to keep a smile on Matt's face!

On the outside, the sharp lines are further enhanced with the addition of a set of super-wide Rota Grid wheels, while handling upgrades come courtesy of TEIN coilovers and some bigger brakes. We love a good 300ZX, Matt's fine example certainly ticks all the boxes!



JOEL LAWIE

TOYOTA SOARER GT-T

This sinister '94 Soarer isn't a car you'd want to meet down a dark alley at night!

The black 1JZ-powered monster has been transformed with a Vertex wide-body kit on the outside, as seen on some of the world's finest drift cars. This has been finished off with Stuke canards and a Japspeed rear spoiler to ensure everyone who sees it knows this car means business.



The car is also dropped on some HSD Monopro suspension and fitted with some Fiske Profil alloys up front and Cosmis XT-005s on the rear (with a humongous width of 11 inches!).

Performance mods have so far been limited to an uprated radiator and a manual gearbox conversion, although Joel tells us that he's aiming for big power in the near future. Keep up the good work, Joel, we like what we see...



WILLIAM SANCTUARY

NISSAN 350Z

Here's one three-fiddy you won't forget in a hurry! William's car has had a comprehensive reworking to ensure it looks as awesome as possible, along with some tasty performance upgrades, too, of course...

Let's start with the obvious – that wild colour scheme! This comes thanks to a 3M wrap and the specific hue is named 'Atomic teal' – and we just love it! The crazy colour has been set off with some heavily polished Work CR Emotion Ultimate Kiwami rims, and some Tarmac Sportz body enhancers to ensure this car really stands out.

Smatterings of carbon fibre and those aggressive headlight brows only add to the visual drama.

But it's not all show and no go; far from it. William's gone for a Cobra Sport exhaust system and carbon fibre air intake to fully enjoy that lovely V6 burble, while BC Racing coilovers take care of the car on the twisties.

Add to all this some top-spec Recaro fixed-back buckets inside and this Nissan is a very pleasant place to spend some quality time.





PHIL EGAN NISSAN ELGRAND

You may know Phil for his work with Nissan Cubes over the past few years (he's had quite a few striking modified examples). But he's recently been in touch to tell us about his latest project – this Nissan Elgrand JDM MPV – which he claims is very similar to a Cube, but a little more powerful and spacious.

Unsurprisingly, things didn't remain standard for long here. "I've gone for a Jekyll 'n' Hyde style – keeping a clean, VIP look on the driver's side, while going for a slightly crazy, Kawaii-inspired colourful theme on the other," Phil explains.

This means that on the right-hand side of the car, we've got a super-smooth, decluttered look, whilst the left-hand side is now covered with ice cream stickers, and even an illuminated 3D ice cream sign! "I got told my Cube used to look like an ice cream van, so thought I'd carry this theme on," Phil laughs.

The interior is equally as striking, with additions such as leopard print curtains, long pile black fur headlining and other quirky VIP-infused styling touches scattered throughout.

It's not all fun and games, though. This car comes with the same



V6 engine that's fitted to the 350Z, and Phil has added BC Racing coilovers into the mix to ensure that this MPV isn't always found in the slow lane.

Another fantastic build from one of the UK's wackiest car builders, then. We can't wait to see what Phil does next!

MARC CUNNINGHAM SUBARU IMPREZA WRX

Picked up last year for the bargain price of just £700, this capacious Scooby estate now serves as the perfect company car for owner Marc to run his detailing business from.

Although standard when purchased, the car is now rocking Whiteline bushes throughout, along with a fully-forged engine and more modern turbocharger.

But perhaps the most memorable modifications on this car come from the Marvel pattern graphics which are now scattered around the car. The engine bay is now awash with hydro-dipped parts depicting the likes of Iron Man and Spiderman, while inside the roof lining looks like one big comic strip!

Future plans include a full air-ride suspension system. Sounds like this is going to be one truly unique Impreza...





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CLUB PROFILE: SOARER UNION/JZX NATION

Phil Donington relates the history of one of the largest Toyota clubs/forums in the UK, Soarer Union/JZX Nation, which as you've probably guessed, covers all things Soarer and JZX Chaser...

A couple of years ago a group of us were looking for a Toyota Soarer forum. The ones that were out there worked in their own ways but none really embodied what we were looking for: a home for posting builds; planning going to shows or meets; discussing drifting; and showing off stock cars. Every car is a winner in its own way so we wanted something fresh which we could be proud of and that felt like family. So we took the plunge and Soarer Union was born.

The club has gone through many changes in its short time. The forum software is now on its fourth incarnation as the previous ones we were never quite happy with. We also now have several traders on board.

Members were signing up because they were looking for information on the JZ and UZ series engines so we included these in the club as separate sections. We also had members with JZX-bodied cars joining us. They're growing in popularity in the UK and the drift scene here is evolving in a big way, so JZX Nation was born.

Although they are separate clubs, the forum is shared and we do joint events. It's great bringing all these cars together. We have never been so proud as when we can turn up to a show and have so many Soarers and JZXs lined-up, as you hardly ever see that many together in the UK.

We're all about builds, meets, drifting, trading and anything Soarer/JZX related. So if you want to join a club ran by enthusiasts with an open attitude to tuning and preserving these machines then get involved! We'll be at many of the Jap shows so come and say hello."

CONTACT: www.soorerunion.com or www.jzxnation.com



JAP RIDERS: JAP VS GERMAN DYNOS DAY

We headed to Plymouth back in September to catch up with one of the UK's most active Jap car clubs, Jap Riders, for its final event of the year. Club frontman Jon Lo talks us through proceedings...

Jap Riders has made it to its sixth year and I'm pleased to report the club is stronger than ever! However, whereas before our meets were just 'battles', this event was a 'war' as our rival club Deutsch Riders took up the challenge for a Jap versus German day!

In total, 27 cars hit the rollers, meaning the day was so busy that we couldn't keep up with the results! However, we do know that the highest power figure of the day was recorded by Steve Bicford, whose Evo IX made 416bhp!

Some previous winners attended the event but didn't decide to defend their titles.

The staff, Jay Peters and Chloe Best, worked awfully hard to keep

the event running as smoothly as it could possibly have done.

Jap Riders has reached over 1000 registered members now, and has over 3000 'likes' on Facebook. We have no idea what the future holds for the club, but if all goes to plan we may have our own brand in just two years time. For now, however, our members will continue to strive for excellence and will continue to take up our rolling road challenges every year.

We would like to thank AK Motorworx for the use of its rolling road, Simon Britton (ASPhotographic) for the photos and our staff, Jay Peters and Chloe Best, for making the day extra special.

CONTACT: www.jap-riders.com



Photo credit: Simon Britton (ASPhotographic)



CLUB PROFILE: RX-8 OWNERS' CLUB

We took some time out recently to get up-to-speed with the RX-8 Owners' Club, the most popular rotary-powered club in the country. It was a bright, late summer's day in the stunning Yorkshire Dales and the club was undertaking a photoshoot/drive day.

First up, we found Chloe Halliday's beautiful white 40th Anniversary edition RX-8 and her friend and fellow model Jessica Taylor showing off some of DAB Racing's rotary-powered rockets. Also there on the day was John's award-winning blue, 200bhp, NA, Class C sprint car sitting on Tein coilovers and Toyo R888 tyres. This car's last outing saw it destroying the competition by over five seconds a lap at Blyton Park.

Dave Bean, the RX-8 Owners' Club's sprint champion and team principal, then walked us through the extensive development of his grey, stripped-out machine which sits on Cusco coilovers. His

Photo credit: Andrew Harrison

supercharged, 300bhp Time Attack car was first featured at Japfest in May of this year. The car, developed by Rotary Revs, has taken the original design philosophy behind the RX-8 to a new level. Light and agile, the car appears to simply glide around corners.

Whilst we were there, Mike McAteer from the club expressed his views that the old-fashioned car club model needs to be modernised in this day and age: "Car clubs need to push forward with enthusiasts who want to promote cars that the manufacturers have long forgotten about. Out-of-the-box the RX-8 is an amazing driver's car and it shows that you don't need massive horsepower to go fast around a race track!"

Check out more from this thriving car club by hitting the link below.
CONTACT: www.rx8ownersclub.co.uk

FORGE MOTORSPORT PERFORMANCE CAR ACTION DAY, CASTLE COMBE

The Forge Action Day, held in early September, may not have exactly broken its own mould in terms of show content but when you factor in the impressive mix of track action, cool cars and big aftermarket manufacturers, you could argue that following the old adage of 'if it ain't broke, don't fix it' was definitely a wise move for the event's organising team.

This was the fifth year that Gloucestershire tuner Forge has added its weight, ideas and industry friends to Castle Combe's tried-and-tested Action Day format, and the result is always a truly eclectic gathering that has become known for its ability to attract the most diverse range of cars and enthusiasts on the UK show calendar. It's certainly the most inclusive of all UK shows and one of the very few places where classic and retro cars – and their respective owners – happily rub shoulders with Japanese and Euro cars, race and drift machinery, and even kit cars and specials. When describing the attendees at this show, it's easier to pick a genre that's not here, rather than ones that are. Put simply, if it's got an engine and wheels, it's welcome at Forge Action Day.

Divided into 15-minute sessions, the track was a hive of activity all day, with enthusiast owners of all marques taking time to acquaint themselves with Combe's demanding crests and curves. With clubs being a big part of this event, the metal on track was often as weird, wonderful and diverse as the static displays in the paddock.

A unique aspect of the Forge Action Day concept is the trade village in the middle of the showground itself. Thanks to Forge's unique standing in the marketplace, many of the firm's technical partners chose to support the show and exhibit at the circuit. Blue-chip names like The Performance Company, Milltek, Tarox, Bilstein, Meguiars, APR, Powerflex and Toyo Tires all lined-up to show off their latest wares, as well as networking and swapping tales of derring-do on track. Many put on special show offers throughout the day, and show-goers were keen to grab a bargain whilst they were there.

Catching up with Forge MD Peter Miles after the show, it was clear that the 2015 event had been another great success from the viewpoint of all parties. "It never fails to amaze me what a fantastic selection of cars and people this event attracts," he said. "I'd like to



give my heartfelt thanks to all the owners, clubs and enthusiasts that supported us today. This event has always been about throwing the doors open to a show that welcomes every genre, every marque and every scene in a celebration of great and interesting cars from across the spectrum."

CONTACT: www.forgemotorsport.co.uk

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IMMACULATE CONCEPTION

Mark Kelly's 3000GT is a masterclass in tuning obscure 1990s super coupés; built for street, strip and show, it's a true polymath. And unlike his last one, it's not on fire...

Concept cars are peculiar things. Sometimes they exist to highlight a future direction for a company; new design language, technology that's being developed, things to look forward to. Occasionally manufacturers present a car as a 'concept' at a show that's pretty much production-ready – like the Audi TT, the Alfa Romeo 4C or the C1 Corvette.

Other times, they're totally pie-in-the-sky – look up the Dodge Deora, and the Ford Nucleon which, er, had a nuclear reactor in the back; these were examples of the designers running haywire before the accountants could step in and say 'hey, guys, how about we run a few numbers, and maybe pull together a focus group?'

Then there's a very special subset of concept cars: the outlandish visions of the

future that directly lead to the immortality of production reality, not in form but in spirit. Lincoln's 1955 Futura earns an honorary place in this group, not because it actually got built but because it became the first Batmobile; the real heroes of this obscure genre, however, are the likes of the Vauxhall SRV, Peugeot Proxima, Alfa Romeo Navajo, and Lamborghini Athon – cars that could never exist in their own right, but paved the way for an exotic future. Into this heady brew, we may also stir the Mitsubishi HSR.

First unveiled in 1987, HSR was actually a series of six cars under the 'Highly Sophisticated transport Research' banner, released biannually at the Tokyo Motor Show to showcase emerging technologies. It was the second one, 1989's HSR-II, with its active aerodynamics, that pretty much directly led to the production of the





Words: Daniel Bevis Photos: Steve McCann

SINGLE TURBO 3000GT >



Right: Fully rebuilt V6 lump with single Garrett GT4094R promises around 800bhp at 2bar when properly run in later this year

Mitsubishi GTO. Fanciful as that may sound, (for, admittedly, they don't look all that similar) it's solid gold and true blue.

Mitsubishi was keen to enter the tech-fest fray of the increasingly intelligent 2+2 sports coupé market, sparring with the likes of the Toyota Supra and Nissan 300ZX, and it was HSR-II's influence that saw the production GTO ending up with active aerodynamics with automatic electrically-adjusting front and rear spoilers, four-wheel steering, electronically controlled suspension, and all manner of other nerdish bells and whistles.

It slapped the GTO badge on there to evoke the Gran Turismo Omologato name employed by Ferrari, no less (although a pedant might point out that Mitsubishi first used the badge on the Galant, back in the 1970s), but the marketing men stepped in with a suggestion that European badge snobs mightn't like seeing the fabled GTO legend on a Japanese car, and thus exports were badged as '3000GT'. So that's what we're looking at here – a brawny UK-model Mitsi, jam-packed with über-clever tech...

...except that we're not, actually. Its owner, Mark Kelly, has disabled the rear-steer function, he's deleted the air-con and the ABS, he's even slung out one of the turbos. Why? Well, let's begin at the beginning, shall we?

"Like most petrolheads, my car history has been long and varied," he explains, settling into the tale like a raconteur over post-dinner cigars. "From humble beginnings in a Mk2 Fiesta at the age of 17 through to my love of Japanese cars, there have been some good choices and some bad ones – the less said about the Mazda MX-3 and MX-6 the better – and the last seven years or so have been devoted to the 3000GT. I had always wanted to own one of the 1990s Japanese super coupés, and the shortlist was either a Supra, a 300ZX or a 3000GT; having searched for a few months and driven all three, I was drawn to the 3000GT's 3.0-litre V6 twin-turbo, matched with AWD and styling straight out of *Magnum PI* – I am of a certain age, after all!"

With a retro itch to scratch, Mark soon found himself inking his name on to the V5 of a Mk1 3000GT of 1993 vintage. It was in mint

condition, good enough for him to want to keep it all standard, although we all know how that intention invariably ends. "After a year or so I was used to the factory 320bhp and started craving a little more," he grins, surprising precisely no-one. "So the quest began to free a few more horses. These are notoriously hard to fettle and I didn't want to make a balls of it, so after a few recommendations I was directed to Jonathan at Ai Autosport who, it turned out, was not only the UK's leading expert in tuning Evos but had also owned and raced a Mitsubishi GTO with his father. Together we embarked upon a four-year adventure which ultimately saw me sitting in a Mk1 3000GT pushing out over 500bhp, and also gaining a close friend." That, though, is not the car you're looking at here. The long-term Mk1 project met a depressing and untimely end due to a failing oil line, of all things, spewing its juice over a hot manifold and sending the whole thing up in flames at the side of the road.

But people like Mark are made of stern stuff and, while a few days of extraordinary





grumpiness followed, the answer to the whole bleak situation turned out to be beer. Lots and lots of beer...

"I was drowning my sorrows with Johnny, and he suggested how cool it might be to build a 3000GT with a single Garrett twin-scroll turbo," he recalls. "Within a few weeks, I'd found myself a clean Mk2 down in England: quick flight, test-drive, sale agreed, drive back to Scotland, ferry back, and here we go again!"

The new purchase was mechanically stock, which suited the lads fine given the work they had in mind. But it did also have a few choice mods to spur the project on; a Mk4 nose conversion is something that UK models never enjoyed and provides a fresher look, and there was a set of Nissan 350Z wheels under the arches. "The first challenge was to hunt down a single-turbo manifold," says Mark. He casually tosses this phrase out as if they're after a screwdriver or a packet of biscuits, but in fact such an item doesn't actually exist, hence the unique hook of the project.

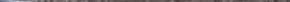


"We embarked upon a four-year adventure which ultimately saw me sitting in a Mk1 3000GT pushing out over 500bhp"



SINGLE TURBO 3000GT >

"It was built to be a mixture of show and drag car and the result so far is pure mental!"



Forum advice pointed him toward a chap in the USA who runs a good line in custom manifolds and, after three months of fabrication, a sumptuously welded masterpiece plonked on to Mark's doormat. Having drooled over it for a few hours, it was packed back up and despatched to Zircotec: "It took three weeks as the guys were busy doing some stuff for some F1 teams or something," he shrugs, and this focus on quality set a precedent for all that followed.

Eager to blow that burnt-out old build into the weeds, Johnny got stuck into the new project like a man possessed. The whole underside of the car was stripped back, subframes and all, to be sandblasted and

repainted. Every last nut, bolt and washer was replaced with marine grade stainless steel for the non-torque components, and OEM replacements for the load-bearing ones. There are polybushes everywhere, new bearings and ball joints – Mitsubishi never built a GT this clean. And when it came to the engine, the guys just went nuts. "The engine and gearbox were stripped down and built up to our own custom spec," says Mark. "The single turbo is a Garrett GT4094R twin-scroll, and the motor's fully forged with Vipac management. The A/C was ditched along with the four-wheel steering and the ABS – basically if it didn't make the car go faster it was removed."

That's not to say that this is a fully function-

over-form endeavour. Mark was keen that the engine bay be tidy and clean in order to showcase that jewel-like V6, so the wires were tucked and fuse boxes relocated to make it look a little more cartoonish. Various shiny bits were powdercoated by Nu-Luk Wheels, who also set about refurbishing the tired 350Z rims. And having had his fingers burned (almost literally) by the demise of the former project, you'll note that the neat original leather interior now sports a super-fancy plumbed-in extinguisher system, with five nozzles in the engine bay...

"The build took the best part of a year waiting on parts and things, but the actual mechanical work once Johnny started only



took four weeks, which shows you what type of loony he is," Mark laughs. "Nearly everything on this car has been modified in some way to get it to work, and the car's as much Johnny's as it is mine. It was built to be a mixture of show and drag car; I didn't want to have a fully stripped drag racer as I wanted it to look good on the road too, and the result so far is pure mental!"

"The plan was always to run at 2bar, and the brief times we've had it there during testing have been totally savage; the final output will be in the 800bhp region at 2bar on 97RON, which is the best pump fuel we can get in Northern Ireland." And with plans to get out on the strip and get the 3000GT into

the tens next year, it sounds like this show car is going to surprise a few people.

Mark's far from finished with it too. The interior will be coming in for a reworking in due course, and he has plans to develop the transmission and suspension to get the thing running faster, better and smarter. In essence, this 3000GT has gone full circle: what was born of an outlandish concept car passed through the complexity of series production, into a process of simplification and streamlining, and is now continuing to evolve. It is Mark's very own concept car. And given the model's obscurity here in Europe, that's exactly what a lot of people may view it as. There's certainly nothing else like it on the road! ☀

Engine & transmission: 6G72 3.0-litre V6, fully rebuilt and forged, Wiseco pistons, Brian Crower rods, APR studs, all new pulleys, idlers and pumps, air-con delete, uprated 3mm lash adjusters, 3SX adjustable cam gears, solid engine mounts, custom GCTech single turbo manifold kit with twin screamer pipes, Zircotec coated and wrapped with DEI titanium, Garrett GT4094R twin-scroll turbo with DEI titanium turbo blanket, custom downpipe, Mongoose twin-exit exhaust, twin Tial 38mm wastegates, rebuilt heads with Brian Crower valve spring and titanium retainer kit, HKS SQV Super Racing BOV, custom brake and clutch fluids system, Koyo alloy radiator, twin 12" Spal radiator fans, custom Mitsubishi Diamante plenum, Evil Empire plenum spacer, custom throttle body, modified CX Racing front-mount intercooler, twin 9" Spal FMIC cooling fans, K&N cone filter, Walbro GST 450 fuel pump (455 lph), braided fuel hose from tank to FPR, custom coolant overflow system, ABS delete, Amber Performance uprated oil cooler, fuse boxes relocated and wires tucked, battery relocated to boot, Vipac ECU, SPEC stage 4+ clutch with Fidanza alloy flywheel, rebuilt gearbox with 300M output shaft, Kormex input spool, B4H hybrid rear LSD, solid diff mounts

Chassis: 8x18" Nissan 350Z wheels with Hankook EVO tyres, Tein coilovers, rear-steer delete, adjustable rear camber arms

Brakes: K Sport eight-pot front calipers with 356mm discs, K Sport four-pot rear calipers with 330mm discs, Pagid RS29 pads

Exterior: 1999-spec front-end conversion, underside fully stripped and rebuilt

Interior: Full leather interior, OMP 4.5-litre plumbed-in extinguisher system

Thanks: I'd like to give a huge shout to Johnny at Ai Autosport who has put so much of his own time and enthusiasm into this car – without him it simply wouldn't have happened, and I'd like to apologise for the damage to his liver and sanity. I'd also like to give a shout out to the guys at Nu-Luk Wheels for all the great powdercoating

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Nitrous Oxide

Just about everyone has heard of it but who knows exactly what **nitrous oxide** actually is, how it works and just what benefits it can have for your engine?

Most people familiar with engine tuning will already know the very basics of what nitrous oxide is and how it works. After all, it's common knowledge that it comes in a bottle, is injected into the engine and offers more oxygen content, which means more fuel can be added to burn it with. But there's far more to it than that.

Nitrous oxide has been around for many years, more than most people realise. It was actually discovered in the late 1700s, although its true potential wasn't brought into use until much later. At first, that was as an anaesthetic, better known as laughing gas, something it's still used as today.

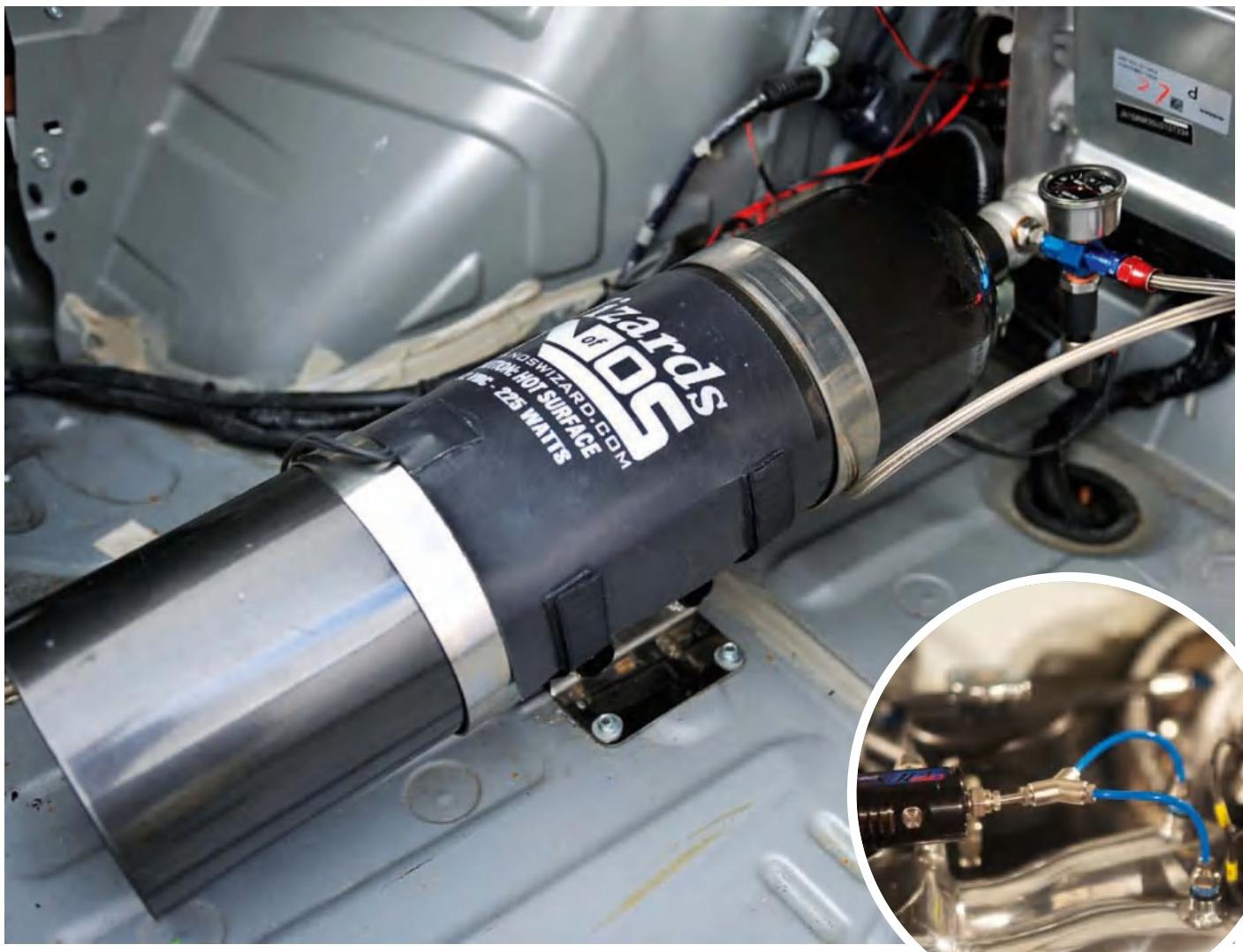
During World War II it was also used to help planes fly at a higher altitude, where the air is thinner, without loss of power. This is due to nitrous oxide's richer oxygen content – around 15% more than conventional air as we know it.

However, nitrous oxide offers more than one benefit and when it comes to the ins and outs of how it works, it's important to know that it's actually a liquid that then boils to become a gas. It's therefore imperative this transition occurs within the engine's intake system, as when the liquid transforms to a gas, a heat exchange takes place that hugely cools the temperature of the air around it. This process can massively reduce the engine's intake temperature, increasing the

density and ultimately power output, which is especially good news for turbo applications.

But there's more to it still. Once the nitrous oxide has boiled to a gas, entered the engine's combustion chamber and is heated to over 550°F it will then divide into its two parts: oxygen and nitrogen. This offers further benefits, as the improved oxygen content increases the temperature and therefore the burn rate. Meanwhile the nitrogen element works to buffer this heat, reducing the chance of detonation.

It's no surprise that since those early days, nitrous oxide's performance-enhancing capabilities were quickly adopted by racers and tuners across the globe and it's since filtered down into street car applications *





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